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LAKE CARRIERS' ASSOCIATION.

To consider and take action upon all general questions relating to the navigation and carrying business of the Great Lakes, maintain necessary shipping offices and in general to protect the common interests of Lake Carriers, and to improve the character of the service rendered to the public.

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BRITISH STEAMSHIP CIRCULAR.

H. E. Moss & Co., Liverpool, in their semi-annual circular say:

We regret the depression in shipping still continues, and that freights, which commenced to fall more than a year ago, are now so low as to be quite unprofitable. Many owners have already commenced to lay up their steamers, and it is only by thus reducing the present excessive supply of available tonnage, and by lessening to a great extent the future output of new vessels, that in time freights can again be brought to a payable level.

What is presently perplexing most British owners is the probability of the United States government granting bounties to shipping under their flag, and also the many gigantic combinations which have recently taken place in the shipping world.

Oil fuel for steamers is one of the coming problems of the day, and recent experiments have proved its adaptability and advantages. It is our opinion that before long oil will be used more generally as fuel, especially for government vessels, and for merchant steamers employed in those trades where the price of coal of late has been so abnormally high.

So many statistics have recently been published, we will content ourselves by stating that the amount of new tonnage at present under construction is almost as high as it has been at any time during the last three years, and the tonnage launched in 1901 was the highest on record. The following figures may prove interesting:

Merchant and other vessels (not war ships) launched in the United Kingdom during 1898, 1899, 1900 and 1901.

1898	1899	1900	1901
1,367,570 tons.	1,416,791 tons.	1,442,471 tons.	1,524,739 tons.

Merchant and other vessels (not war ships) under construction at the end of 1898, 1899, 1900 and 1901.

1898	1899	1900	1901
1,401,087 tons.	1,306,751 tons.	1,269,919 tons.	1,359,205 tons.

Other countries, notably the United States of America, Germany, France, Norway, Sweden, Italy, and Japan, have also turned out a very large amount of tonnage, totaling for 1901 no less than 1,092,800 tons. These figures, taken collectively, appear alarming, but at the same time we must not forget that the volume of trade throughout the world was never greater than at present, and as time goes on, must naturally still further increase. This, combined with the coming revival of confidence at home and abroad which must follow the termination of the war in South Africa, together with the opening up of China, and the development of the Pacific trade, as yet in its infancy, is sure to absorb, sooner than most people think, the superabundant tonnage, and makes us hope that the present period of depression will not last so long as is generally expected. The treaty just concluded between Great Britain and Japan is certain to accelerate the views we have expressed.

Consequent upon the marked fall in the price of steel during the first half of 1901, many orders for new vessels were placed, and the majority of builders, as can be seen from the above figures, have sufficient work in hand to keep themselves fully occupied for the greater part of this year; others are, however, anxious to secure further contracts, and are willing to anticipate the market by taking lower prices; but as wages can only be reduced by 5 per cent. each six months, the expected great reduction in the cost of new work seems yet a long way off, as the amount of tonnage now under construction is so large, and the builders do not feel inclined at present to create any friction with their workmen by attempting to deviate from the agreement they have already made with them.

Our government is about to place a number of orders for war vessels with private firms, which naturally tend to strengthen the market, as the effect of government orders is always disproportionate to their real value.

Prices for building new steamers have already fallen considerably, in many instances fully 20 per cent. from the highest figures obtained in 1900. Second-hand vessels have depreciated even to a more marked extent, and the supply of both new and second-hand steamers is much in excess of the demand.

A great number of old liners and merchant steamers continue to be sold to British and Continental buyers to be broken up, and many thousands of tons must, before long, be disposed of for the same purpose.

TRADE INTELLIGENCE BUREAU OF NORWAY.

Under date of December 11, 1901, the Department has received from Consul-General Bordewich notice that the Norwegian government has established a new bureau in the State Department to be called the "Trade Intelligence Bureau of Norway." Translation of a circular is inclosed, which explains the scope of work as follows:

"The object of the 'Trade Intelligence Bureau of Norway,' is to procure from abroad information which may contribute to promote the welfare of Norwegian commerce, navigation, industry, agriculture, the fisheries, and handicraft, and likewise to furnish foreign countries with intelligence which may be of service to Norwegian trade. The bureau, which shall be established at Christiania, shall assist all branches of trade by providing them with detailed particulars as to markets for Norwegian goods, duty, freight, and everything relating to transport and credit, shipping dues and charges, state of and conditions existing at seaports, consular fees, compulsory certificates of origin, making up and methods of packing of wares, etc., and, likewise, as to how and where the various branches of Norwegian trade can obtain their requirements. The bureau shall, until otherwise ordained, forward all reports of general interest to Norwegian trade to all the bourses and guilds throughout the country. Information will, as a rule, be supplied free of charge. Special expenses (except postage), such as those entailed in procuring information respecting credit, analyses, procuring samples, telegrams, etc., shall be repaid to the bureau by the inquirer."

GOVERNMENT ACTION ON THE METRIC SYSTEM.

The House Committee on Coinage, Weights and Measures, gave recently a public hearing on the bill for the adoption of the metric system. As practical manufacturers John A. Brashear and Geo. M. Bond appeared, the former being in favor and the latter opposed to the system. Mr. Brashear said that the metric system had been largely used in his works for ten years and stated that "the workmen find it easier to work in that system." Mr. Bond, on the other hand, stated that although the works with which he is connected (the Pratt & Whitney Co.) had done a large amount of work for foreign countries on the metric system, he found that their workmen preferred the inch.

On March 1 there were 172,000,000 feet of lumber on the docks at Duluth and West Superior and the cut for the season is expected to be close to 420,000,000 feet. Much of the lumber now in stock has been sold and the coming season will be a busy one for the carriers.

CANADIAN ASSOCIATION OF MARINE ENGINEERS.

The third annual convention of the National Association of Marine Engineers of Canada was held in Toronto on the 29th, 30th, and 3rd of January. Representatives were present from Toronto, Montreal, Kingston, Collingwood, and St. John, N. B., and the councils in Victoria and Vancouver, B. C., not being able to send delegates so far, submitted their views in writing.

At the opening session, after routine, the grand president, W. I. Barton, of St. John, delivered his annual address. He referred to the growth of the order, and urged that efforts should be put forth to place the name of every marine engineer in Canada on its membership roll. He spoke of the death during the year of D. L. Foley, past grand president, and David McQuade, vice-grand. S. A. Mills had resigned the secretary-treasurership in consequence of his removal to the United States, and J. A. Findlay, of Toronto, had been appointed in his stead, provisionally. He had instituted a council at Levis on his way to this meeting, and there would soon be councils at Hamilton, Sorel, and other places. The Parry Sound North Star was now their official organ. Some amendments to the constitution would be proposed, and there were some changes in the law which would be urged upon the government. They should work in harmony with the steamboat owners, their interests being identical.

The secretary-treasurer's report showed a large increase in the membership, which is now 370, and a balance in the treasury of \$290. A number of notices of motion were presented.

The second day was fully occupied in discussing matters relating to the welfare of the profession, covering amendments to the constitution, amendments which will be asked for from the Dominion government in the laws relating to steamboat inspection and other matters. In the evening the Toronto Council entertained the delegates, steamboat owners, representatives of the city council and others to a banquet.

The third day further discussion took place on proposed amendments to the law. The following were suggested: That all tug boats should carry licensed engineers; that British steamers running in Canadian waters should be compelled to carry at least two licensed engineers; that no temporary certificates or permits be issued to any who are not fully qualified engineers; that United States vessels purchased for use in Canada should not be brought in free of duty; that while the present law makes no distinction between ocean, lake and river side-wheel boats, smaller shafts are desirable on steamers navigating rivers only. The new president was authorized to organize a deputation to wait on the government with reference to these and other matters.

The following were elected and installed as officers for the ensuing year: Grand president, T. J. S. Milne, Kingston; grand vice-president, O. L. Marchand, Montreal; grand secretary-treasurer, N. J. Morrison, St. John, N. B.; grand conductor, F. S. Henning, Toronto; grand doorkeeper, Samuel Beatty, Collingwood; grand auditors, Robert Craig, Toronto, and James Gillies, Kingston. Past Grand President Barton was made honorary member of the Grand Council.

The next meeting is to be at Montreal.

TO CONSERVE LAKE LEVELS.

President Livingstone, of the Lake Carriers' Association, reached Washington on Saturday to relieve Secretary Brown in watching the course to be pursued by the House Rivers and Harbors Committee relative to the proposed power canal which the Consolidated Lake Superior Power Co. desires to build at the "Soo."

The matter was gone into extensively at hearings had last session, and a bill was drafted providing for various restrictions insisted upon by the United States engineers, but it was never considered by the House. Now the Committee is considering the proposition whether to include the proposition in the regular bill or provide a separate measure.

The great objection urged against the canal is that it might lower the level of Lake Superior, which would compel vessels to shorten their draft. Chairman Burton said to-day that there would be no hearing, but both sides are watching the matter very closely.



DULUTH-SUPERIOR.

Special Correspondence to The Marine Record:

The ice is leaving the harbor, and from the present outlook navigation will be open in a week or two.

There is about 40,000,000 feet of lumber on the Ashland docks, from which vessel shipments will be commenced as soon as navigation opens.

The steamer Yale has been chartered for the coming season by the Canada Atlantic Transportation Co., to run in the grain and package freight trade between Duluth, Chicago and Depot Harbor. She will take the place of the William L. Brown, which was under charter to that line last season.

Reports from Whitefish Point, and other ports along the south shore of Lake Superior, state there is comparatively little ice to be seen. In the rivers and in Mud lake the ice is fast rotting, and unless severe cold weather sets in there should be no difficulty in forcing the passage by the latter part of this month.

The United States Government has begun action at Duluth against Capt. James Davidson, of Bay City, to recover for damage done to the breakwater extension at Two Harbors, last summer, by the steamer Shenandoah. The Government alleges that the repair work to the damage done the cribwork amounted to \$4,012.50.

A number of deals to charter vessels for the season for lump sums are on, and it is almost certain that some of them will be closed this week. Lumber dealers are still in the market for boats, and a number of vessels that usually carry ore will be tied up for the season during the next few days. No chartering in the lumber trade has been done, but the general opinion is that the rate will open at \$2.50 from ports from the head of Lake Superior, and that season contracts will be made at that figure, although vessels are holding for a \$3 rate.

The immense quantity of iron ore shipped from northern Wisconsin, northern Michigan and Minnesota points is a source of no little wonder to those who may have occasion to look into the figures to obtain an idea of its actual dimensions. A conservative estimate places the probable lake movement from mines next season at 23,000,000 tons, an increase of 2,500,000 tons over the previous year. Some estimates have placed the figure at 25,000,000 but while an increase of 2,500,000 tons could be handled without overtaxing the railroad and transportation lines, it is doubtful whether 5,000,000 tons could be taken care of at the receiving ports, though the mines and vessels might be able to handle it. The magnitude of the business becomes apparent, when great railroad systems especially equipped for it are simply unable to remove the ore as fast as delivered. Of all the ore forwarded from the Lake Superior region, Minnesota furnishes 52.5 per cent. the Mesaba 43.8 per cent. and the Vermillion 8.7 per cent.

There has been a great deal of talk of ore being chartered for delivery from the head of the lakes at 75 cents, but as near as can be learned in Duluth none has been placed at that figure. It is also learned that the report that the Pittsburgh Steamship Co. is engaged in pounding the rate down to 75 cents for the opening, or for any other time, is wholly unfounded. It is well known here that it is not the policy of the Pittsburgh Steamship Co., which is the vessel corporation of the United States Steel Co., to take advantage of its power to try to fix vessel rates at a figure less than conditions warrant. Their policy, on the contrary, has been to support the market in every reasonable way. There has been considerable tonnage chartered at 80 cents for ore, and that seems to be the probable opening rate. The movement of grain to the head of the lakes for storage, pending shipment by lake, has been disappointing this winter, but is not regarded as necessarily a factor calculated to weaken the lake freight market materially, for the reason that the grain is sure to move sometime during the spring or summer. It can be said, however, that there is not in store, or rather in the elevators, as much as formerly.

The railroads have won over the steamboat lines in the matter of ticket commissions and it is stated in a dispatch from Chicago that the defeat of the steamboat men was owing to the action of A. A. Schantz, general passenger agent of the D. & C. and D. & B. lines in surrendering to the railroads after agreeing at the Buffalo meeting of the lake passenger agents that he would not. Mr. Schantz says that he made no promise at Buffalo in regard to the D. & B. line, but simply as to the D. & C., and the D. & C. will grant commissions, while the D. & B. will not, because the railroads would not give it ticket representation otherwise.

CHICAGO.

Special Correspondence to The Marine Record:

From all points where ice blocks the way to vessels, reports indicate an early opening of navigation.

The Barry line boats Empire State and Badger State will be run in competition with the Goodrich line between Chicago, Milwaukee and Green Bay.

The upper lakes are clearing of ice so rapidly that resumption of navigation by April 1 is freely predicted. Boats have already made the trip from shore towns of Michigan to Chicago, and the ice in Mud Lake and the "Soo" is thinner than usual, while it is breaking up fast.

The traffic ahead of vesselmen for the season lessens the fear they otherwise would entertain for a longer period of business than the lakes generally afford. Outside of the one item of grain there was never anything seen like the volume of business the Great Lakes will carry before the close of next December.

The following meteorological observations are furnished by the office of the U. S. Weather Bureau, Chicago, for the week ending noon, March 12, 1902. Prevailing wind directions for the week south; highest velocity 44 miles, from the south on the 11th; mean temperature for the week, 44°; highest temperature, 65° on the 11th; lowest 32° on the 6th.

At St. Joseph on Monday, the steamer C. W. Moore was sold under the hammer of the United States marshal, and bid in by J. H. Graham, president of the Graham & Morton Transportation Co., for \$5,000. Claims against the steamer amounted to \$45,000. She was the property of the West Michigan Traction Co., a concern which proposed building a railroad from Benton Harbor to Kalamazoo. The Moore will be added to the Graham & Morton fleet, and placed on the Chicago-St. Joseph run, opening the season early in March.

There promises to be some trouble between the engineers and masters of tugs and the owners of the tugs. Trouble would seem to be brewing at both the head of the lakes and at Chicago, and there may be a general strike of tugmen if something is not done in the near future to settle the differences. Increased pay is one of the demands of tugmen at the head of the lakes. The masters here last year received \$125 per month with their board. They are now asking \$150, while the engineers ask that their salaries be increased from \$105 per month and board to \$120 and board. The local tugmen also ask that all men employed last year be reengaged unless there is some good reason why some should not be. At the head of the lakes the tugmen have had every fourth night and every fourth Sunday off. This was the way the Chicago owners proposed to do with their tugmen this year. Last year they had every third night and every third Sunday off. Now the Duluthians are asking for Chicago's system of last year. It is a matter of conjecture now how the matter will end.

Upon the result of a series of conferences now being held in Chicago, apparently depends the inauguration of a lockout which may result in tying up navigation on the Great Lakes. This lockout, if inaugurated, will affect the 2,400 members of the Licensed Tugmen's Protective Association, composed of the captains and engineers of the tugs running out of twenty-eight harbors along the lakes. The difficulty is over an alleged attempt on the part of the Great Lakes Towing Co., otherwise known as the "tug trust," to lengthen working hours. Capt. Charles Carroll, national president of tugmen's union, and Capt. Cyrus Sinclair, general manager of the trust, are conferring with a view to settling the differences. They have as yet reached no agreement, and the Great Lakes Towing Co. is refraining from any move to employ any captains or engineers for the coming year. Capt. Sinclair said that he did not expect to have any trouble with the men in making an agreement for the coming season. Mr. Newman, president of the towing company, is confident that there will not be any labor trouble.

For the past year there has been some talk that the Barry Transportation Co. would expand its business, but the reports were to the effect that the company would only get two cities outside of Milwaukee and Chicago. Now, however, it has been settled that the Barry boats will touch eight ports north of Milwaukee. Capt. Peter Barry has just returned from a trip to Menominee, Mich., and intermediate ports, and has secured dockage, warehouses and agents. The cities to which the boats will run for general merchandise and package freight as well as passengers are the following, together with the names of the agents appointed to look after the business: Sheboygan, Louis Tistwuyde; Manitowoc, Samuel Hall; Two Creeks, Otto Bush; Kewauke, George Duvall; Sturgeon Bay, C. Cochems; Algoma, H. W. Walker; Marinette, Smith, Thorndyke & Brown Co.; Menominee, Carpenter & Cook. Some of the properties secured by the Barry people is in first-class shape and improvements on other property will be made immediately. "Indications are that the new runs will be well patronized," said Capt. Peter Barry. "In many instances we have been requested to operate our boats north and in some of the cities where we have opened offices we have been promised half the business at the very start which is a good indication that we are wanted." Each one of the cities in which the Barry boats will enter have been giving business to the

Goodrich Transportation Co., and while Capt. Barry did not say so, the new venture of the company means opposition to the Goodrich line at no less than eight ports north of Milwaukee. Nothing has yet been done regarding rates for general merchandise and package freight, but is probable that both lines will have the same rate. Should one company decide to cut its rates, the other will certainly follow and a rate war would result. At this time, however, a rate war does not seem probable. During the coming season the Barry Co. will operate four steamers. The two boats secured last summer—the Badger State and Empire State—will be on the northern run and the No. 1 and the City of Fremont will continue on the Chicago-Milwaukee run. The northern boats will make two round trips from Chicago and Milwaukee to Menominee and intermediate cities each week. Work on the craft is now in progress and they will be in readiness to open the season about April 15. All the docks in the cities north of Milwaukee are large and in each instance the warehouse on the dock is in good condition. At Manitowoc the company will have a 300-foot dock and the one at Sheboygan is nearly of the same size. At Two Creeks, which is a small town about two miles north of Two Rivers, the dock owned by the Pfister estate has been secured.

BUFFALO.

Special Correspondence to The Marine Record.

During the coming season the steamer C. F. Beilman, sold by the Stewart Transportation Co. to Port Huron parties, will tow the schooner Mary A. McLachlan. Capt. J. W. Montgomery will command the Beilman, and Capt. Maitland will sail the McLachlan.

Another change of name for a member of the Western Transit Co.'s fleet has been effected, the steamer Milwaukee having been rechristened Yonkers. It has not been announced, but there is a report that the new boat to be turned out this season at Chicago for the Western, will be given the name which formerly appeared on the bow of the Yonkers.

E. T. Douglass, assistant general manager of the Western Transit Co., is absent on a Western trip. He will go as far as St. Paul, Minn., and will return to Buffalo early next week. Gibson L. Douglass, general manager of the line, is at Pasadena Cal., where he has been spending the winter. He is not expected to return to Buffalo before the last of the present month.

The grain markets are quiet all around and chartering is as dull as it has been at any time since the closing. Elevators at the head of Lake Superior now contain 13,938,350 bushels of grain as follows: Wheat 12,859,970 bushels, corn 144,343 bushels, oats 170,163 bushels, rye 455,800 bushels, barley 308,074 bushels. Flaxseed in store 1,850,094 bushels. The fact that shippers have not at any time since December been in the market for vessels to hold grain cargoes on board, and even thus late in the season do not manifest any particular desire to make charters, does not seem to disturb vessel owners in the least.

When Louis Lautenslager, manager of the Independent Tug Line, gets his fleet overhauled and put in shape as he has designed, the boats will present a fine appearance. The Delta, which has been practically rebuilt during the winter, months, is now nearly ready for service, and she will be a good craft. Workmen are now engaged in putting the F. S. Butler in shape. She will have a new cabin, deck and bunkers, and when complete will be practically as good as new. An outlay of \$1,000 will be made on her. The tug Fallister was thoroughly overhauled last season, and will require no repairs. Regarding the addition of other boats to his fleet, Manager Lautenslager said that if business warranted, new boats of a good class would be added as rapidly as required.

Bids were opened at the office of Major Symons, in Buffalo, on Tuesday last, for the removal of the sunken wreck of the steamer Gov. Cushman, which lies in the Erie basin, just north of the Reading coal dock. They were three in number, as follows: William D. Johnston, of Lewis, N. Y., \$4,417; Buffalo Dredging Co., of Buffalo, \$3,735, and J. E. Hingston, of Buffalo, \$3,500. The Gov. Cushman was totally destroyed on May 1, 1868, by a terrific explosion of her boiler, which occurred shortly after daybreak, when all hands aboard were asleep. Several were killed instantly, and a score injured. The Gov. Cushman was a freighter, owned by George Rushington. The explosion occurred while the steamer was moored at a dock in Buffalo creek. In less than an hour after the disaster a number of tugs attempted to tow the burning vessel into the Erie basin, in order to lessen the danger to other craft near by. It was while these tugs still had the burning steamer in tow that she sank while off the docks of the Reading Coal Co. Several futile attempts have been made since that time to raise her.

The Cunard Co. has decided to build two new steamers for Atlantic passenger trade, which will eclipse in size anything afloat. The vessels will be over 700 feet long, with engines of 48,000 horse power, and have a speed of 25 knots. This will be a great advance on anything hitherto attempted in the British mercantile marine. The general outlines of the company's steamers, the Campania and Lucania, will be followed.

DETROIT.

Special Correspondence to The Marine Record.

According to the first report for 1902 on the condition of the ice in the Great Lakes, issued by the local office of the Weather Bureau, there is much less ice in the lakes at present than at this time last year, indicating an early opening of navigation.

A chart of Conneaut Harbor has just been completed and is one of the finest ever made. It gives depths at all points and outline of harbor exact. Similar maps have been made this winter of Ashtabula, Fairport and Cleveland.

The following meteorological observations are furnished by the office of the U. S. Weather Bureau, Detroit, for the week ending March 11th. Prevailing wind directions for the week, southwest; highest velocity, 33 miles, from the southwest on the 6th; mean temperature for the week, 46°; highest temperature, 60° on the 11th; lowest, 25° on the 5th.

The following transfers of light-house keepers have been ordered by the Treasury Department: Wm. L. Campbell, transferred from Stannard Rock, Michigan, to assistant keeper of Marquette; Edward J. Lane, transferred from Forty-Mile point, Mich., to keeper of Michigan Island station, Wis.; Sheridan K. King, transferred from North keeper of Frankfort pierhead, Mich.

One of the propositions submitted by Capt. Cy Sinclair, the trust representative, was to submit all differences arising between the tugmen and the trust to an arbitration board of three, one to be selected by the tugmen, one by the trust, and a third to be neutral. This would have the effect of taking the matter out of the hands of the Tugmen's Association, so they figure, and they declined to consider it.

The greatest precaution that is being taken in regard to the new passenger boats of the D. & B. line just now is that against fire. Supt. Calder, of the drydock has a special system of communication from each boat to the central police station, and if the watchmen on the two boats do not send in an "all right" signal every half hour, day and night, officers will be sent flying down to the boats, while in case of fire the department will be ready at a moment's notice.

Capt. A. E. Stewart, manager of the Stewart Transportation Co., came to this city Saturday and sold the steamer C. F. Beilman to Colin McLachlan. The Beilman will tow the schooner Mary E. McLachlan the coming season. The Beilman was built by F. W. Wheeler & Co., in 1892 and is one of the largest and best built boats on the lakes. When the Beilman and the McLachlan pull together they will make the best looking tow on the lakes. Capt. J. W. Montgomery will command the Beilman and Capt. Maitland the McLachlan.

With favorable weather conditions it is believed the ice along the south shore of Lake Erie will soon break up and clear the harbors at Cleveland and other ports. Should such be the case, General Passenger Agent A. A. Schantz, of the D. & C., announces that the steamer City of Detroit, Capt. McKay in command, will start on her first trip of the season from Detroit to Cleveland on March 17. Arrangements were made Thursday with T. E. Clark of the American Engineering Co., and inventor of the Clark system of wireless telegraphy, to place a set of his instruments on the steamer for use on the first trip. Other instruments will be installed at the company's offices in Detroit and Cleveland.

The city assessors do not propose rushing blindly into the matter of boosting assessments on vessels owned in Detroit, as instructed by the State Tax Commission, and it is barely possible that if any considerable raise in the assessments is made it will have to be done by the State Tax Commissioners themselves. At all events no further steps will be taken in the matter until vesselmen have been given an opportunity to file statements of the property owned by them. At a meeting of the assessors the matter was touched upon in a general way, and while no definite conclusion is reached it is not probable that any immediate action will be taken. Vesselmen claim that other ports along the lakes are open, and that it would be impossible for Detroit boats to pay the tax proposed, on their actual cash value of the boats, and compete with those not required to pay any tax. The result, it is predicted, would be to drive vessels from this work, and while the assessors are anxious to fulfill the wishes of the State Tax Commission, they are at the same time unwilling to do anything which will harm the city and drive vessels to other ports. For that reason it is probable that, while there may be changes in the assessments by the local officers, if the assessments were boosted to the actual cash value of the vessels the State Tax Commission will be given an opportunity to do so.

When building operations, now in progress, are completed, the Detroit & Cleveland Navigation Co., in conjunction with the Detroit & Buffalo Steamship Co., will have the most extensive and finest dock property on the Detroit river, if not on the Great Lakes. The docks and warehouses, belonging to the two companies, commencing at the easterly boundary of the Anchor Line Co.'s docks, between First and Cass streets, extend eastward

along the river front, a distance of 1,000 feet, and are accessible from Wayne and Shelby streets as well as through several areas opening off Atwater street. From the river front the property extends back to Atwater street, having a depth of about 240 feet at the foot of Shelby street. That portion of the property lying east of the foot of Shelby street will be exclusively devoted to the use of the new D. & B. line. The magnificent new steamers, Eastern States and Western States, will land there. The greater part of the dockage east of Shelby street is being rebuilt at a higher elevation than the old docks. New piles have been driven in many places, and new sets of spring piles, each fifty or sixty feet in length, have been put in for the accommodation of the boats of the new line. From Shelby street eastward there will be an open wharf about forty-five feet wide, between the warehouses and the river. A new freight warehouse, just being completed, has a frontage along the river of 110 feet and extends back 240 feet, inclusive of a 20-foot driveway.

CLEVELAND.

Special Correspondence to The Marine Record.

President Livingstone, of the Lake Carriers' Association, has completed satisfactory arrangements at Washington in the matter of the power canal at the "Soo," and a committee of engineers from the War Department will make the investigations the Lake Carriers desire, to ascertain whether the power canal will lower the water level of the lakes.

President Keefe, Secretary Barter, and about seventy-five delegates, representing the locals of the International Longshoremen's Association at Lake Erie ports, were in session here this week. Committees to take charge of the different propositions were appointed and President Keefe is hopeful that the work will be completed in time to meet with the dock managers and get through this week.

There will be no need for vesselmen to fear the bars across the channels at Ashtabula, Fairport, and Conneaut this season. Major Kingman has had all the bars surveyed, and knows the amount that will have to be removed to make the channel clear. Lately he obtained permission from the Secretary of War to advertise for bids for their removal, and will soon let the contracts and have the bars cleared away before a single boat moves in the spring.

There is nothing doing in ore freight and the coal men have not taken any tonnage. Vesselmen are still guessing what vessels the Algoma Steamship Co. has secured. It was first reported that the Canadian company had chartered four American ships and Thursday a dispatch from Toronto said that the Clergue company bought four boats. According to a dispatch received from Detroit the company has chartered the steamers Rappahannock and Sacramento, of the Davidson fleet, and the two big barges building at the Davidson yard at Bay City. The steamers will be sailed by Capt. F. D. Welcome and Capt. C. H. Wilson.

The Hamburg-American Line has appointed Mr. D. Jay Collier, sole agent for their cabin business in Cleveland. Mr. Collier is well known to the traveling public as city passenger and ticket agent of the "Big Four Route" in Cleveland, with offices located at 116 Euclid avenue (Colonial Arcade). The new elegant steamship "Deutschland" of this line on which Prince Henry returns, is said to be the fastest steamer in the world, and for this occasion will be a bower of flowers, having on board 8,000 American beauties, besides a vast number of other kinds, which are furnished by the company. There will be a florist in charge to change the decorations daily. There are 268 steamers in the service of the Hamburg-American Line, and two new ones now building, one of them 725 feet long, the guaranteed speed of which is to be 25 1/4 knots per hour.

TOLEDO.

Capt. Geo. E. Dailey, who for the past six or seven years has been with the Miller Bros., will this season sell goods for the Fiedtke Bros., at this port.

The tug Saugatuck made the first trip of the season today, in the Toledo harbor. She was put under fire and towed the tug Woods down the river to Scane's way, where the Woods will receive a complete overhauling. Aside from some floating ice, the harbor is entirely clear. In refitting the steamer Maruba, it developed that the pin in her crank shaft was broken. It is supposed that she met with this accident in her attempt to break through the ice last winter. The Craig Ship Building Co. will make the repairs.

The steamer James Fisk, jr., is receiving a thorough overhauling. She will be put into the lumber trade this season. When the improvements, which are now in progress, have been completed, over \$12,000 will have been expended upon her.

Sweeping changes took place in the officers of Licensed Tugmen's Protective Association at Saturday evening's meeting. Louis Goss started the movement by resigning as secretary, and he was followed by President Sheldon. Without hesitation the association proceeded to fill the vacancies. The new officers are Albia Page, president, and Ralph Millard, financial secretary. Both of the new officers were unanimously elected.

FLOTSAM, JETSAM AND LAGAN.

The new Detroit and Buffalo boats will have white upper works and a black hull.

About 1,000,000 tons of iron ore will be moved from Michipicoten to Lake Erie ports the coming season.

The tug W. B. Castle will do wrecking at the "Soo" this season, together with another tug, in opposition to the tug trust.

It is proposed at Buffalo to bond the city for \$250,000 for the purpose of improving Buffalo harbor as far east as Hamburg street.

A new chart of Manitou Passage, Lake Michigan, has been issued and is now on sale at the United States Lake Survey office, 33 Champau building, Detroit.

The Anchor liner Conestoga, while going into Chicago three years ago, struck one of the city water works cribs, and now the Anchor Line is suing the city for \$70,000 damages.

The steamer Edward Buckley has just reached Chicago with a salt cargo from Manistee, the first boat to open up navigation this season on Lake Michigan. The boat had little trouble with ice.

Forty-nine warships will be floated for the British fleet this year. In 1903 sixty ships will be under construction in addition to the twenty-seven which it is proposed to lay down in the new program.

The little passenger steamer Douglas, of the Thomson line, which has been running up the Lake Huron shore from Detroit, will be cut down into a steam barge this season and will engage in the freight trade.

The Algoma Central Steamship Co., with headquarters at the Canadian "Soo," will have the two passenger steamers, King Edward and Ossifrage, running between the "Soo" and Toledo the coming season, each boat making a trip a week.

The smallest engine ever made has been completed. It is a horizontal engine, and can stand on a ten cent piece. One has to look through a microscope to see plainly its various parts. It runs as accurately as the best engine ever built. It is made of gold, silver, copper and steel.

Heat from cold water seems fabulous, but it is an established fact. The water is decomposed from electricity into its constituent gases, hydrogen and oxygen. When these gases are reunited the act of combination causes the evolution of intense heat. The well-known lime-light is an example of this.

The Great Lakes Towing Co., known as the tug trust, has filed its answer in common pleas court in the suit brought against it by Henry G. Potter, of Toledo. It is admitted that the plaintiff owned the scow over which the controversy grew, but it is denied that the craft is worth \$600. The towing company admits that it has possession of the scow and that it refuses to deliver the same to Potter. It is denied, however, that the scow was loaned by Potter to the defendant or that the latter has wrongfully converted it to its own use.

Most persons who have slept on ocean steamers in the tiny boxes that are called "staterooms" have wondered whence the magnificent name was derived. A British colonial paper gives an explanation of what we have never before seen explained. On the early Mississippi steamboats the cabins were divided by curtains only. But an enterprising owner built wooden partitions in his boats, and named the cabins after the various states of the Union. The innovation proved popular, and passengers coming on board would ask: "What state are you putting me in this trip?" The derivation of the term is plausible. But were there not "staterooms" on passenger vessels before the days of steam?

The L. E. & D. R. R. has decided to make Rondeau, in Kent county, the landing place of the big car ferries that carry coal trains across Lake Erie from Conneaut, O. The present terminus of the ferries is Port Stanley, which is also the terminus of the London & Port Stanley railway, under lease by the Lake Erie road. The reason for the change is the delay in the completion of arrangements for an extension of the lease of the Port Stanley line. An agreement was reached last August, but before the papers were signed the City of London, which owns the railway, insisted on a modification of terms and no action has been taken. A contract for a \$50,000 coal hoist at Rondeau has been let. The new arrangement will mean a big boom for Rondeau.

A dispatch from Liverpool late on Thursday reports the foundering of the American Liner Waesland off Holyhead, Wales. All the passengers were saved. There were thirty-two in the cabin and eighty-two in the steerage. The Waesland left Liverpool on Wednesday for Philadelphia, and it is believed that during a fog she came into collision with the Houston Liner Harmonides, which sails between Liverpool and Buenos Ayres. The damage to the latter is not stated, but the Waesland was so badly damaged that she at once began to sink. She did not go down, however, before all the passengers had got off safely, except a steerage passenger and a child. Built for the Cunard Line, the Waesland was launched in 1867, from the yard of J. & G. Thompson, of Glasgow, and christened the Russia.

OCEAN TRANSPORTATION FOR COAL.

I am asked to supply definite information on the subject of heavy transportation of coal from Great Britain and America to France, for the purpose of demonstrating the propriety of building special coal-carrying steamers. In the actual condition of the carrying trade, the complaint of all owners is that the business is being done on unprofitable terms, if not with absolute loss to themselves; 5s. 6d. (equal to 7 francs, or \$1.35) per ton from Cardiff to this city is at this writing a high price. More charters are being written at \$1.20, and they hover between the two extremes. From Baltimore or Newport to Marseilles the present price is fairly firm at 9s. (\$2.25), and the difference between these two rates is \$1.10. Hardly more than a year ago, the difference between coal rates from Baltimore and from Cardiff to Marseilles ranged from \$2 to \$2.30. While the depreciation in freight rates is very generally explained by the release tonnage heretofore required by the British Government for war operations, the superabundance of new tonnage and the large number of ships contracted for and in process of construction, the change in the relative difference between the rates from Cardiff and Baltimore to the Mediterranean is attributed to special conditions. It is pretended that a very large number of steamers have recently gone to the United States for grain and cotton which have not been offered for shipment, and that these ships have therefore been forced to take what they could get in the way of cargo, upon any terms, with the result that the relative difference between American and British coaling ports has been hammered down fully 50 per cent. My informants believe that when the large quantity of tonnage now in American waters returns to this side, it will engage in whatever may be offered in Europe at the time, in preference to repeating the operation of carrying coal at 9s.; since, while there may be no money in bringing British coals into the Mediterranean for about 5s., there is always an opportunity to go from Marseilles to the Black Sea or to Spanish ports, where grain or iron ore may be picked up for delivery in England, while there is substantially nothing in the way of cargo to be taken back to New York.

A steamer of 3,000 tons capacity can today load at Cardiff with navigation coal of the type usually required in this city at 12s. (\$2.92) a ton. Assuming the owner to have contracted for payment at the rate of 7 francs \$1.35) per ton for freight (and this is today the very outside price), he must calculate upon expenditures amounting in all to 5.30 francs (\$1.02) per ton before he can begin to take into consideration depreciation and profit. The official charges would perhaps vary somewhat from the following figures; but experience shows that upon a vessel of 3,000 tons the items of expense per ton, amounting to 5.30 francs, actually average as below. Assuming that the local charges at Baltimore would be the same as at Cardiff, and making due allowance for the increased length of the voyage, I establish the comparative cost of delivering 3,000 tons of coal at Marseilles from either Cardiff or Baltimore as follows: * * *

Thus the owner shipping coal from Cardiff may look for depreciation, repairs, and net profits from the difference between 5.30 francs and an extreme of, say, 7 francs per ton, while the owner shipping from Baltimore must look for his from the difference between 6.35 francs and 11.25 francs—the apparent discrepancy being very much to the advantage of the steamer from Baltimore. But it requires one-third more time to ship from Baltimore, and the prospect of some return cargo, moderately certain in the first case, is equally remote in the second. It will be noted that in practice as much time is required for loading and discharging coal from Cardiff as the voyage, properly speaking, demands, and it may be assumed that one of the first efforts of American navigation companies will be to reduce this extended period. Demurrage charges in this port are practically unknown, and discharge facilities are at present limited to 600 tons per day.

The market becomes a more valuable one every year, the tendency of the established lines being to frequent this port for the purpose of coaling, the total annual requirements of the port having doubled within the last three or four years. There is also a prospect of supplying the Swiss market from this port, and to that end the Paris, Lyons and Mediterranean Railway Co., has prepared a tariff reducing the rate from Marseilles to Geneva from 14 francs (\$2.70) to 11.85 francs (\$2.28) per ton. This tariff requires the sanction of the Minister of Commerce before it can become effective, and for some unknown reason this sanction has not yet been obtained. If the lower rate is adopted, it is moderately certain that a very considerable interior business will be done in consequence.

Except for the troublesome question of return cargo, it would be easy to assert that the American voyage, including delays for loading and discharging, being one-third longer than the Cardiff voyage, requires in fairness a rate only one-third more than that of the latter, the longer time at sea being perhaps overcome by the advantage of cheaper fuel. In practice, the American exporter is at present paying more than this one-third, and there never was fair ground for the former difference, which ranged from 7s. to 12s. (\$1.70 to \$2.92). Whether general rates be high or low, something like 1,000,000 tons of foreign coal must be laid down annually in Marseilles, and the fluctuation in the relative rate from Cardiff or Baltimore will largely determine the proportion of American trade in this region.

Standard navigation coal from Cardiff is today selling at 22s. (\$5.34) in Marseilles. It costs 12s. (\$2.92) at Cardiff, or 13s. (\$3.16) with the export tax included. American competing coals are being sold here at a discount of 1s. 6d. (36 cents). Experience and prejudice, or whatever the controlling causes have been, have set this margin as a measure of comparative quality. American coal at the seaboard, then, must be sold low enough to cover the higher freight charge and a persistent prejudice because of quality. The items average now from 14s. to 5s. In other words, is must be sold, quality for quality, at f. o. b. prices dangerously near 8s., or perhaps 9s. (\$1.94 to \$2.19), and every cent under these figures represents the advantage which our dealers have in the Mediterranean market at present.

We have sold 184,797 tons of American coal in Marseilles during eleven months of 1901, against 941,171 tons of British coal. It gave entire satisfaction. I have before me a letter from Worms & Co., the heaviest single importers, in which they say:

Our importations of American coal during the year will approximate 100,000 tons. The principal companies to which we have sold it regularly are the Peninsular and Oriental Steamship Co., the British India Steam Navigation Co., the Nippon Yusen Kaisha Steamship Co., and the Messageries Maritimes Steamship Co. They have all declared themselves very well satisfied with the quality of the fuel.

These are the largest steamship companies doing business in the Mediterranean. During the year, local selling prices went to pieces, and the dealers' war has prevailed until a week or two ago. This has involved the making of many contracts for next year's delivery at prices certain to net a loss of from 30 to 75 cents per ton, unless market conditions change materially. One dealer has figured out for me about 500,000 tons already contracted for, and seems to think that these contracts will tend to diminish American importations next year. I do not think so. The Paris, Lyons, and Mediterranean Railway Co., which requires 300,000 tons, has not yet closed, I understand. All this is guesswork, to some extent. There is no war either for or against American coal. It has demonstrated its excellence, and it will come in when the price permits it. Meantime, the war between the dealers has ceased, and they are taking no new contracts at less than 22s. (\$5.34). American anthracite in the meantime has invaded the market and would control it were not the fuel itself so hard to secure. With American mines taxed to supply domestic demands, it may be said that the European is at present more interested in American competition here than is the American himself.

As the case stands, dependent as we are upon foreign ships, we are in the Mediterranean coal trade, and we can probably remain, but there is always an "if." If, as at the height of the war excitement, we must again pay 21s. (\$2.43 or \$2.91) it is obvious that we can not cut our f. o. b. prices to that extent. That we could pay that enormous freight at one time was only because the f. o. b. prices at Cardiff were well over twice what they are today. Thus, while reasonable business policies encourage faith in the permanency of our Mediterranean coal trade under existing conditions, the mere memory of freight rates once paid is a standing menace.

I have always contended, and still maintain, that our commerce in coal can be guaranteed only by the land transportation lines engaging in the ocean carrying trade. Even a very small fleet of colliers controlled by the coal roads would provide a steady influence of inestimable value. It may be doubted whether the owners of colliers are losing anything to-day, in spite of their cry of distress. They have been enjoying abnormally high prices, and the years of plenty have been followed by a year of famine. Business is dull everywhere except in the United States, and even there the freight furnishers are refusing to ship hoping for better times abroad. In shipping circles, a gradual stiffening is anticipated soon. As an independent proposition, the creation of a fleet of coal carriers—particularly if they should be of modern type, capable of loading and discharging promptly—seems favorable, and, contemplated as an enterprise of one of the seaboard coal roads, it is not only attractive, but almost an imperative requirement. The foreign market is the only thing that will guard the mining companies from stagnation, in the event of dull domestic trade. The threatened through bill of lading from the mine to the consumer abroad, is one of those moral influences which are to-day holding down the level of ocean freight rates. A gentleman largely interested in foreign transport enterprise tells me that every Atlantic carrying company is shortening sail with a view to this contingency. He said:

"The American railroads are so important in themselves and drain so vast producing areas, thus contributing the bulk of east-bound freight, that they cannot afford to remain in any sense dependent upon foreign navigation companies to take these goods to market. Whether they buy us out and run our ships for their own account or secure legislation which will lead to the construction of a purely American fleet, it amounts to the same thing in the end. The railway companies can stand hard times as well as the British shipowner, and when the good times come their stockholders will pocket the profits, instead of ours. The through bill of lading would simply leave us without anything to stand upon, in so far as American trade is concerned."

Marseilles, December 12, 1901.

ROBERT P. SKINNER,
Consul-General.

NOTES.

A METHOD has been patented by a resident in Ontario, Canada, for lighting rivers electrically. A cable would be laid along the bottom of the river or other navigable channel, wires would be branched off this, floats attached to these, and the floats would carry electric lamps fed by the cable. If desired, the lamps could be raised 20 feet above the floats. The inventor claims that this would be cheaper than employing lighthouses, buoys, and pilots along the St. Lawrence river.

THE damming of St. Mary's Rapids is an engineering feat that not long since would have been looked upon as impossible, but is now being successfully done by H. E. Talbot & Co. for the Lake Superior Power Co. A dam across the river above the rapids is necessary if Lake Superior is to be kept at its present level, as it is being drained by five canals—three ship canals and two water power. A new water power at Sault Ste. Marie, will increase the drainage. Five stone piers will be built and sluice gates put between them, when the first step in the work will have been completed.

G. B. HUNTER, of Swan, Hunter & Co., the well known shipbuilding firm at Newcastle-on-Tyne, after an investigation into the subject of steel shipbuilding in Canada, says it can be done here cheaper than anywhere else in the world. No country in the future will be able to compete with Canada, neither England nor Germany, nor the United States, when steel plates are made in Canada. Mr. Hunter is in favor of a very fast Canadian Atlantic service, and suggests 25 knots. This would require three vessels, which could be built for \$10,000,000. A fourth vessel would be necessary if it was proposed to come up the St. Lawrence.

TAKING the factory to the raw material instead of bringing the material to the factory is an innovation just put into operation on the Mississippi river by a button factory. The factory is a boat 42 feet long and 12 feet wide, fitted with machinery for the manufacture of buttons, and provided with a three horse power engine. The principal material used is mussel shells, which are found all along the river, and one of the great expenses heretofore has been the cost of transporting the shells to the factory. Now the factory has reversed the operation and will go to the mussels. When a bed of the shells is found the boat will drop its anchor and go to work. When the bed is exhausted it will move on.

CHIEF ENGINEER EMIL PRILLWITZ, of the North German Lloyd steamship Kron Prinz Wilhelm, is experimenting with an arrangement which he has placed in the ship for use in case of collision. A small wheel abaft the pilot-house is turned and instantly hydraulic pressure closes twenty water-tight doors in the lower part of the ship, making sixteen water-tight compartments. The fact that all the doors are closed is instantly shown on an electric dial, on which the numbers of the doors and their locations are printed. The sixteen water-tight rooms are more than enough to float the vessel in case any part of her hull is punctured. The experiments show that not more than two minutes is required to render the Kron Prinz Wilhelm unsinkable.

THE secretary of the British Admiralty has introduced the naval estimates for 1902-3 in the House of Commons. They show a total of £31,255,000, as compared with £30,875,000 last year. Mr. Arnold-Foster remarked that no thinking man could have anticipated any reduction of the estimates of last year, in view of the fact that the army was engaged in a difficult conflict seven thousand miles away. The secretary said that the progress of naval construction during the last year had been unparalleled. The present estimate gave the government £15,000,000 for new ships, and it was intended to spend the money. Forty-nine ships would be put in the water during the present year, and next year there would be under construction 60 ships, in addition to 27 others that would be laid down. Besides this, a large program of reconstruction would be undertaken, thereby adding greatly to the fighting power of the fleet.

THE following is the board of directors of the Richelieu & Ontario Navigation Co., elected at the annual meeting held last month: Senator Forget, R. Forget, W. Wainwright, F. C. Henshaw, George Caverhill, E. B. Garneau, C. Paradis, J. Kerr Osborne, H. M. Pellatt, H. Markland Molson and Wm. Hanson. Last season was one of the best in the company's record. The gross receipts were \$1,109,456, and operating expenses, \$920,559. After deducting fixed charges the net profit was \$166,097. New stock to the amount of \$626,400 is being issued for the following purposes: Payment for new steamer Montreal, \$412,000; for furnishing steamer Montreal, \$113,000; two wharves at Quebec, \$15,000; improvements upon the company's new hotel, the Manior Richelieu, \$26,400. During the year the company spent over \$80,000 in renewing and repairing steamers. For instance, \$14,500 had been spent on the Algerian for feathering wheels, improved state room accommodation, etc., on the steamer Columbian \$22,700; on the Canada, \$24,500; on the Spartan, \$18,300, and on the Hochelaga, \$6,200. These improvements were in addition to the regular outfitting which is done annually. Three old steamers for which the company had no further use were disposed of. They were the Caspian, sold for \$21,000; the Riviere de Loup, sold for \$2,000, and the Island Queen, sold for \$2,000. It was announced that no more vessels would be sold for some time.

SECTIONS OF REVISED STATUTES OF THE UNITED STATES RELATING TO LICENSED OFFICERS OF STEAMBOATS.

TREASURY DEPARTMENT,
STEAMBOAT-INSPECTION SERVICE,
OFFICE OF SUPERVISING INSPECTOR-GENERAL,
Washington, D. C., January 10, 1902.

To Licensed Officers of Steamboats:

The following sections of the Revised Statutes and extracts from the Revised Rules and Regulations of the Board of Supervising Inspectors are published herewith for the information of licensed officers, and their special attention is invited to the penalties to which they render themselves liable by noncompliance with the provisions thereof:

Section 17, Rule V, Rules and Regulations: "Whenever a steamer meets with an accident involving loss of life or damage to property, it shall be the duty of the licensed officers of any such steamer to report the same in writing and in person, without delay, to the nearest local Board: Provided, When from distance it may be inconvenient to report in person, it may be done in writing only, and the report sworn to before an authorized magistrate."

Section 4413, Revised Statutes: "Every pilot, engineer, mate, or master of any steam vessel who neglects or willfully refuses to observe the regulations established in pursuance of the preceding section (4412) shall be liable to a penalty of fifty dollars, and for all damages sustained by any passenger, in his person or baggage, by such neglect or refusal." (For Western rivers only.)

Section 3, act of Congress approved June 7, 1897: "That every pilot, engineer, mate, or master of any steam vessel, and every master or mate of any barge or canal boat, who neglects or refuses to observe the provisions of this act, or the regulations established in pursuance of the preceding section (2), shall be liable to a penalty of fifty dollars, and for all damages sustained by any passenger in his person or baggage by such neglect or refusal: Provided, That nothing herein shall relieve any vessel, owner, or corporation from any liability incurred by reason of such neglect or refusal." (For Atlantic and Pacific coast inland waters.)

Section 2, act of Congress approved February 8, 1895: "That a fine, not exceeding two hundred dollars, may be imposed for the violation of any of the provisions of this act. The vessel shall be liable for the said penalty, and may be seized and proceeded against, by way of libel, in the district court of the United States for any district within which such vessel may be found." (For the Great Lakes and their connecting tributary waters as far east as Montreal.)

Section 4445, Revised Statutes: "Every master, chief mate, engineer, and pilot who receives a license shall, before entering upon his duties, make oath before one of the inspectors herein provided for, to be recorded with the certificate, that he will faithfully and honestly, according to his best skill and judgment, without concealment or reservation, perform all the duties required of him by law."

"Every applicant for license as either master, mate, pilot, or engineer under the provisions of this title shall make and subscribe to an oath or affirmation, before one of the inspectors referred to in this title, to the truth of all the statements set forth in his application for such licenses."

"Any person who shall make or subscribe to any oath or affirmation authorized in this title and knowing the same to be false shall be deemed guilty of perjury."

"Every licensed master, mate, pilot, or engineer who shall change, by addition, interpolation, or erasure of any kind, any certificate or license issued by any inspector or inspectors referred to in this title shall, for every such offense, upon conviction, be punished by a fine of not more than five hundred dollars or by imprisonment at hard labor for a term not exceeding three years."

Section 4446, Revised Statutes: "Every mate, engineer, and pilot who shall receive a license shall, when employed upon any vessel, place his certificate of license, which shall be framed under glass, in some conspicuous place in such vessel, where it can be seen by passengers and others at all times; and for every neglect to comply with this provision by any such master, mate, engineer, or pilot, he shall be subject to a fine of one hundred dollars, or to the revocation of his license."

Section 4465, Revised Statutes: "It shall not be lawful to take on board of any steamer a greater number of passengers than is stated in the certificate of inspection; and for every violation of this provision the master or owner shall be liable, to any person suing for the same, to forfeit the amount of passage money and ten dollars for each passenger beyond the number allowed."

Section 4467, Revised Statutes: "The master of every passenger steamer shall keep a correct list of all the passengers received and delivered from day to day, noting the places where received and where landed, which record shall be open to the inspection of the inspectors and officers of the custom at all times; and the aggregate number of passengers shall be furnished to inspectors as often as called for, but on routes not exceeding one hundred miles the number of passengers, if kept, shall be sufficient."

Section 4468, Revised Statutes: "Every master of any passenger steamer who fails, through negligence or design, to keep a list of passengers, as required by the preceding section, shall be liable to a penalty of one hundred dollars."

Section 4441, Revised Statutes: "Whenever complaint is made against any engineer holding a license authorizing him to take charge of the boiler and machinery

of any steamer that he has, through negligence or want of skill, permitted the boilers in his charge to burn or otherwise become in bad condition, or that he has not kept his engine and machinery in good working order, it shall be the duty of the inspectors, upon satisfactory proof of such negligence or want of skill, to revoke the license of such engineer and assign him to a lower grade or class of engineers, if they find him fitted therefor."

Section 14, Rule IX, Rules and Regulations: "When it is known or comes to the knowledge of the local inspectors that any steam vessel is or has been carrying an excess of steam beyond that which is allowed by her certificate of inspection, the local inspectors in whose district said steamer is being navigated, in addition to reporting the fact to the United States district attorney for prosecution, under section 4437, Revised Statutes, shall require the owner or owners of said steamer to place on the boiler of said steamer a lock-up safety valve that will prevent the carrying of an excess of steam and shall be under the control of said local inspectors."

"On the placing of a lock-up safety valve upon any boiler, it shall be the duty of the engineer in charge of same to blow or cause the said valve to blow off steam at least once in each watch of six hours or less, to determine whether the valve is in working order, and it shall be his duty to report to the local inspectors any failure of such valve to operate."

"In case no such report is made, and a safety valve is found that has been tampered with or out of order, the license of the engineer having such boiler in charge shall be revoked."

"It shall be the duty of the local inspectors to send a copy of this rule to every steamer in their district, when said copies are furnished by the Department."

Section 4448, Revised Statutes: "All officers licensed under the provisions of this title shall assist the inspectors in their examination of any vessel to which such licensed officers belong, and shall point out all defects and imperfections known to them in the hull, equipments, boilers or machinery of such vessel, and also shall make known to the inspectors, at the earliest opportunity, all accidents or occurrences producing serious injury to the vessel, her boilers, or machinery; and in default thereof the license of any such officer so neglecting or refusing shall be revoked."

Section 5344, Revised Statutes: "Every captain, engineer, pilot, or other person employed on any steamboat or vessel, by whose misconduct, negligence, or inattention to his duties on such vessel the life of any person is destroyed, and every owner, inspector, or other public officer, through whose fraud, connivance, misconduct, or violation of law the life of any person is destroyed, shall be deemed guilty of manslaughter, and, upon conviction thereof before any circuit court of the United States, shall be sentenced to confinement at hard labor for a period of not more than ten years."

The attention of masters of steam vessels is particularly directed to the following rule of the Board of Supervising Inspectors in relation to station bills:

Section 15, Rule V, Rules and Regulation: "It shall be the duty of the master of every inspected steamer of 30 net tons and over, carrying passengers on the ocean, lakes, gulf(s), or bays, when such steamer is under way, to cause to be prepared a station bill for his own department, and one, also, for the engineer's department, in which shall be assigned a post or station of duty for every person employed on board such steamer in case of fire or other disaster; which station bills shall be placed in the most conspicuous place on board for the observation of the crew. And it shall be the duty of such master, or of the mate or officer next in command, once at least in each week, to call all hands to quarters and exercise them in the discipline, and in the unslashing and swinging out of the lifeboats, weather permitting, and in the use of the fire pumps and all other apparatus for the safety of life on board of such vessel, and to see that all the equipments required by law are in complete working order for immediate use; and the fact of the exercise of the crew, as herein contemplated, shall be entered upon the steamer's log book, stating the day of the month and hour when so exercised, and any neglect or omission on the part of the officer in command of such steamer to strictly enforce said rule shall be deemed cause for the revocation of the license of such officer. Upon navigable rivers the captains of all passenger steamers of 30 net tons and over shall be required to maintain a strict discipline and organize the officers and permanent crew so as to act with promptness in case of fire or other disaster; and the captain shall cause to be prepared at least two station bills, assigning the officers and permanent crew to definite places. Said station bills shall be conspicuously placed, under glass, near the inspection certificate."

Licensed officers are notified that in case of the loss of their license through any cause, they can obtain a certificate of such loss (Form 2162) to take the place of the lost license, which certificate will hold good until date of expiration of the lost or destroyed license, or grade of license is raised, in which case the certificate may be surrendered and new license issued indicating the new grade."

The attention of officers named therein is particularly directed to the following resolution of the Board of Supervising Inspectors, adopted at the meeting of January and February, 1900:

"Resolved, That masters, mates, and pilots of all vessels be required to exercise due caution in the use of their searchlights so as not to throw the rays of the light into

A willful violation of the above requirement will subject pilot houses of passing steamers."

the offender to a suspension or revocation of license.

Local inspectors are hereby instructed to furnish a copy of this circular (which supersedes No. 13, dated February 7, 1900) with every master's, mate's, pilot's and engineer's license issued.

Copies will be furnished by the Department on requisition.

JAS. A. DUMONT,
Supervising Inspector-General.
L. J. GAGE, Secretary of the Treasury.

Approved

SHIPPING AND MARINE JUDICIAL DECISIONS.

(COLLABORATED SPECIALLY FOR THE MARINE RECORD.)

Tug and Tow—Loss of Tow—Negligent Navigation by Tug.—A tug undertook to tow two barges laden with coal across New York bay from a safe anchorage at Constable Hook at a time when the wind was blowing at a rate between fifty and sixty miles an hour and had been increasing for several hours, and one of the barges swamped and was lost, with her cargo. Held, that, the tug was in fault for negligently attempting to cross under such circumstances, and liable for the loss, and that, the movement being controlled by the master of tug, the barge was not guilty of contributory fault because her master failed to object to the attempted passage. *The Ashbourne*, 112 Fed. Rep. (U. S.) 687.

Foreign Navy—Desertion.—A member of the Russian naval service sent to the United States as one of the force ordered to take possession and serve as the crew of a protected cruiser built for the Imperial Russian government, who deserts before the crew is organized as such and without ever setting foot upon the vessel, is, nevertheless, a deserter from a Russian ship of war, within the meaning of the treaty of 1832 with Russia, authorizing the arrest and surrender of deserters from ships of war of that country, although such cruiser had not yet been commissioned as a member of the Russian navy. *Tucker vs Alexandroff*, 22 Sup Ct., Rep. (U. S.) 195.

Admiralty.—Appeal.—Failure to Secure proper Transcript of Record.—An admiralty suit will not be remanded for a new trial by an appellate court, or to take new testimony, on the ground that the record is incomplete, where such fact results from the failure of appellant to exercise due diligence. *The McDonald*, 112 Fed. Rep. (U. S.) 681.

Distribution of Award—Crew of Disabled Tug.—One of the tugs originally sent out by the tugboat company, after reaching the open sea, which was very rough, became disabled, and was obliged to return, and another tug subsequently took her place in the service. Held, that, inasmuch as her owner effected the salvage of the ship, the officers and crew of such tug were entitled to share in the award. *The Flottbek*, 112 Fed. Rep. (U. S.) 682.

Towage.—Construction of Contract for General Towage Services.—A tugboat company contracted to perform towage service for all the ships of the second party "that may be in the waters of the Straits of Juan de Fuca, Puget Sound, and British Columbia, or vicinity, whether inside or outside of Cape Flattery, and that may require any towage service," for a compensation fixed by a schedule of rates contained in the contract. Held, that, whether an incoming ship was within the "vicinity" of Cape Flattery, so as to be entitled to demand towage service under the contract, must be determined, in the absence of more specific provision, by the usage and practice of tugboats, in towing vessels in from the sea, as to the distance outside the cape they were accustomed to go in search of such vessels, and from which they usually took charge of them; that, in the absence of evidence showing such usage, a claim that a ship which had been driven near the shore, and had anchored in a dangerous position among the rocks and reefs sixteen miles south of the cape, was in the vicinity of the cape, within the meaning of the contract, could not be sustained. *The Flottbek*, 112 Fed. Rep. (U. S.) 682.

Salvage.—Rescue of Ship Anchored in Storm Near Reefs.—Right to Compensation.—Owing to the absence of a light-ship from her station, the German ship *Flottbek* sailed into dangerous proximity to the rocks and reefs along shore sixteen miles south of Cape Flattery, in the night, and, being becalmed, was obliged to anchor. During the night a gale arose with heavy seas, which continued for two days, and rendered her position one of great danger, from which she was unable to escape. On the following morning a large steamship going up the coast came to her relief in response to her signals of distress, and spent several hours in getting a towline on board, during which time she was herself in considerable danger, and her men, who manned a boat and took a line to the *Flottbek*, especially exposed to risk. The towline parted and the steamer, having lost her anchor, proceeded to Tacoma, and at once, by request of the master of the *Flottbek*, notified a tugboat company at Seattle, which sent tugs, and they, on the third morning rescued the ship. The wind had then abated, but the sea was still high, and the ship was unable to extricate herself unaided. It had been decided the night before to abandon her, and half the crew had gone ashore in a boat. Held, that both the steamship and the tugs performed salvage services of such an order of merit as entitled them and their crews to liberal compensation. *The Flottbek*, 112 Fed. Rep. (U. S.) 682.



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CLEVELAND, O., MARCH 13, 1902.

CANALS OF THE WORLD.

In view of the great attention that is now being attracted by the canal question, the following statement, prepared by the Bureau of Statistics, will be found of interest. It shows the commerce, cost and dimensions of the great canals of the world, especially those connecting great bodies of water and which may properly be termed ship canals.

Ship canals connecting great bodies of water and of sufficient dimensions to accommodate the great modern vessels plying upon such waters are of comparatively recent production and few in number. The one great example of this character which has been a sufficient length of time in existence and operation to supply satisfactory data as to cost of maintenance and operation and practical value to the commerce of the world is the Suez canal, and for this the available statistics begin with the year 1870, while its new and enlarged dimensions only date from the year 1896. For the Sault Ste. Marie canal, connecting Lake Superior with Lake Huron, statistics date from 1855, though for the canal in its present form they cover but about four years. Statistics of the Welland canal date from 1867, but for the canal in its present enlarged form cover only two years of operation. The other great ship canals of the world are of much more recent construction and data regarding their operation therefore cover a comparatively brief term, and in some cases are scarcely at present available in detail.

The artificial waterways which may properly be termed ship canals are nine in number, viz:

1. The Suez canal, begun in 1859 and completed in 1869.
- 2.—The Cronstadt and St. Petersburg canal, begun in 1877 and completed in 1890.
3. The Corinth canal, begun in 1884 and completed in 1893.
4. The Manchester ship canal, completed in 1894.
5. The Kaiser Wilhelm canal, connecting the Baltic and North Seas, completed in 1895.
6. The Elbe and Trave canal, connecting the North Sea and Baltic, opened in 1900.
7. The Welland canal, connecting Lake Erie with Lake Ontario.

8 and 9. The two canals, United States and Canadian, respectively, connecting Lake Superior and Lake Huron.

The description which is given of each of these great waterways shows that the length of the Suez canal is about 90 miles, the cost \$100,000,000, the present depth 31 feet, width at bottom 108 feet and at the surface 420 feet, and that the number of vessels passing through it has grown from 486 in 1870 to 1,494 in 1875, 2,026 in 1880, 3,389 in 1890, and 3,441 in 1900. The tolls charged are about \$2 per net registered ton.

The Cronstadt and St. Petersburg canal, which gives a passage way for great vessels to St. Petersburg, is 16 miles long, including the deepening of the bay channel, 20½ feet in depth, and the total cost estimated at \$10,000,000.

The Corinth canal, which connects the Gulf of Corinth with the Gulf of Aegina, is four miles in length, 26¼ feet in depth, 72 feet wide at the bottom, cost about \$5,000,000,

and reduces the sailing distance about 175 miles. The average tolls charged are 18c. per ton and 20c. per passenger.

The Manchester ship canal, which connects Manchester, England, with the Mersey river, and Liverpool, was opened in 1894. Its length is 35½ miles, depth 26 feet, width at bottom 120 feet and at the surface 175 feet, and cost \$75,000,000. The commerce on the canal shows a growth from 879,204 tons in 1895 to 1,492,320 tons in 1900.

The Kaiser Wilhelm canal, which connects the Baltic and North Sea, through Germany, is 61 miles in length, 29½ feet in depth, 72 feet wide at the bottom, 190 feet wide at the surface and cost about \$40,000,000. The number of vessels passing through it has increased from 19,960 in 1897 to 29,095 in 1900, of which number 16,776 were sailing vessels. The tonnage in 1897 was 1,848,458, and in 1900, 4,282,094 tons. An additional canal connecting the same bodies of water by way of the Elbe and Trave rivers was opened in 1900. Its length is 41 miles, depth about 10 feet, width 72 feet, and cost \$6,000,000.

The great North Holland canal, which connects Amsterdam with the sea, cut in 1845 but deepened at a later date, now has a depth of 20 feet, and a width of 125 feet at the surface. The Caledonian canal, which connects the Atlantic and North Sea through the north of Scotland, is 17 feet in depth, 50 feet in width at the bottom, 250 miles long, cost \$7,000,000, and is at its highest point 94 feet above sea level. The canal du Midi, cut through France from Toulouse on the Garonne to Cette on the Mediterranean, a distance of 150 miles, is 6½ feet deep, 60 feet wide, and 600 feet above sea level at its highest point and has 114 locks, total cost, \$3,500,000.

In America, the canals connecting the Great Lakes are the principal ship canals and are three in number: the Welland canal, originally constructed in 1833 and enlarged in 1871 and 1900; the Sault Ste. Marie or St. Mary's river canal, opened in 1855 and enlarged in 1897; the Canadian canal at St. Mary's river, opened in 1895. The American and Canadian canals at St. Mary's Falls are practically identical in location and dimensions, and are used interchangeably by vessels engaged in commerce, as convenience may dictate. The depth of the canals at the St. Mary's river is sufficient to accommodate vessels drawing 20 feet of water. The American canal was originally constructed by the State of Michigan, but subsequently taken charge of by the United States and enlarged at a cost of \$2,150,000. The cost of the Welland canal was about \$30,000,000, largely due to the fact that 25 locks are required in surmounting the rise of 327 feet in the distance of 27 miles. The number of vessels passing through the canals at St. Mary's river has greatly increased during the past few years, while the number passing through the Welland canal has materially decreased; the number passing through the St. Mary's canals being in 1873, 2,517; and in 1901, 20,041, of which 15,837 passed through the United States canal, and 4,204 through the Canadian. The number of vessels passing through the Welland canal has decreased from 6,425 in 1873 to 2,202 in 1899. The marked contrast between the business at the St. Mary's Falls and Welland canals is largely due to the fact that the freights originating in the Lake Superior district are chiefly discharged at Lake Erie ports, and those destined for the Lake Superior region are chiefly produced in the section contiguous to Lake Erie, the Lake Superior freights being chiefly iron, copper and grain, and the Lake Erie freights for Lake Superior, coal and manufactures. The business of St. Mary's Falls canals by far surpasses in volume that of any other canal of the world, the freight tonnage of the American and Canadian canals combined being in 1901, 24,626,976 registered tons, while the net tonnage of the Suez canal in 1900 was 9,378,152 tons, and that of the Kaiser Wilhelm canal, 4,282,094 tons.

LIGHTKEEPERS TRANSFERRED.

A special dispatch from Washington says: The following transfers of light-house keepers have been ordered by the Treasury Department: William L. Campbell, transferred from Stannard Rock Mich., to assistant keeper of Marquette; Edward J. Lane, transferred from Forty-mile point, Michigan, to keeper of Michigan island station, Wisconsin; Sheridan K. King, transferred from North Manitou, Mich., to assistant keeper of Frankfort pierhead, Mich.

YATCHSMEN.

Perhaps it was the tingle of sarcasm in his letter to Sir Thomas Lipton which caused that gentleman to turn down G. W. Post's offer of \$10,000 for the use of the Shamrock II. this year. Mr Post said that he believed that the Shamrock could win with crews reversed, and he proposed to allow Sir Thomas to pick out the English crew which would man the Columbia, and then have the Yankee crew on the Shamrock. Sir Thomas says he does not think well of the idea. However, he will let Mr. Post take the Shamrock for the season for nothing, aside from fitting out and operating expenses to race against the gem of the ocean, both to be manned by Yankee crews, adding that he is confident the Shamrock will be licked.

This arrangement does not strike Mr. Post favorably, as he wanted to attempt to prove his theory that the Yankee sailors are better than the British, so he will send a representative to have a talk with Sir Thomas.

THE DANISH WEST INDIES.

"The Danish West Indies" is the title of a monograph by the Treasury Bureau of Statistics which will appear as a part of the forthcoming issue of the Monthly Summary of Commerce & Finance. It describes the islands included in the recently ratified treaty of the United States and Denmark, by which the islands St. Thomas, St. John, and St. Croix are to be transferred to the United States. These islands, it shows, lie off the eastern coast of Porto Rico and are in fact a mere extension of marine elevation of which Cuba, Jamaica, Haiti, and Porto Rico are the principal representatives; while they also form a connecting link between the Greater and Lesser Antilles. St. Thomas, the best known of the group, lies 38 miles due east of the northeastern extremity of Porto Rico; St. John lies 12 miles east of St. Thomas, while St. Croix lies about 50 miles south of St. John and St. Thomas, and 60 miles southeast of the southeastern point of Porto Rico. Two small islands already belonging to the United States, Vieques and Culebra, which were obtained through the cession of Porto Rico, lie directly between Porto Rico and this newly added group.

The islands are small with a comparatively small producing capacity, their chief importance being by reason of their harbors which they offer and their value from a strategic as well as a general commercial standpoint. St. Croix, the largest of them, is about 20 miles long and from one to five miles wide, with an area of about 80 square miles and a population of about 20,000. It is also the most productive of the islands, a considerable area being devoted to the production of sugar cane and tropical fruits, and agriculture being the occupation of a large proportion of the population. There are two towns on the island, Fredriksted, with a population of 3,700, and Christiansted, with a population of 5,500. The latter is located upon the chief harbor of the island, which, however, is choked with mud and of much less importance than the harbors of either of the other islands. St. John, the smallest of the islands, has an area of but about 21 square miles, and a population of only about 1,000, and a comparatively small cultivatable area, its chief value being in its possibilities for harbor purposes, the natural harbor of Coral Bay being described as one of the best protected natural harbors in the West Indies, but at present little used. St. Thomas, which lies nearest to Porto Rico, is by far the most important in its present availability for harbor purposes, the harbor of Charlotte Amalia having been for more than a century recognized as one of the best, if not the best natural harbor in the entire West Indian group, and having been during all that time a central point as a harbor of refuge and point of exchange for merchandise and a coaling station for vessels from all parts of the world. With passages through which it is easily reached, a good depth of water, and excellent protection from the hurricanes to which that region is subject, it has long been regarded as an extremely valuable harbor, and when Denmark in the early part of the nineteenth century made it a free port it became the distributing point for the entire West Indian group. As a consequence nearly the entire population of the island is clustered around the port of Charlotte Amalia, fully 10,000 of the 12,500 population living in this city, and less than 2,000 being engaged in agriculture.

INSTITUTION OF NAVAL ARCHITECTS.

The Annual Meetings of the Institution of Naval Architects will take place on March 19th, and the two following days, in the Hall of the Society of Arts, London. The Right Hon. the Earl of Glasgow, G. C. M. G., LL.D., president, will occupy the chair. The annual dinner will be given on March 19th, in the King's Hall of the Holborn restaurant.

The council have received an invitation, which has been extended to all members of the Institution, to take part in the summer meeting of the Schiffbau Technische Gesellschaft, which is to be held in Dusseldorf, from 2nd to 5th June of this year. The council having accepted this invitation, a detailed programme will be issued in due course to all members of the Institution, who will then be invited to state if they propose to be present. There will be no regular Summer Meeting of the Institution this year.

The following resolution has been passed by the Council: That the Council will be willing to present a gold medal to any person not being a Member or Associate Member of Council, who shall at the forthcoming meetings read a paper which, in the judgment of the Council, shall be deemed to be of exceptional merit. The Council will also be willing to present a premium of books or instruments to the reader of any paper, not being a member or associate member of council, which paper shall, in the judgment of the council, merit this distinction.

An adventurous career has been led by James B. Connolly, the writer of sea stories, who begins a new series about Gloucester, North Sea and Baltic fishermen in the April Scribner's. Mr. Connolly is himself the son of a New England skipper, has sailed with fishermen from boyhood, could get a job at any time on a Gloucester boat, spent a year at Harvard, went to the Olympian Games and took a prize, served in the Spanish-American War, and made a reputation as a writer of short stories at a single bound when "A Chase Over Night" was published about a year ago.

THE WHEAT HARVEST.

Crop reports from the American side of the Atlantic Ocean are being very closely watched in European markets and the Argentine wheat estimate is markedly an object of interest. The government estimate of 72,000,000 bushels is not generally credited, and 19,000,000 bushels as the exportable surplus is regarded as the amount available for foreign markets. The Argentine Republic, has, however, begun to increase its exports, and 520,000 bushels were shipped in the week ending January 25, as against 96,000 bushels in the week previous, and as compared with 760,000 bushels in the corresponding week of 1901.

It is generally conceded that the Argentine output might be greatly increased were more modern and improved methods of harvesting the crop employed. The wheat is thrashed as soon after harvesting as a machine can be secured, but as the thrashing machines are usually owned by a local merchant or by a combination of farmers, some delay is necessitated. On the large farms where crops are grown by tenants, the machine is owned by the land owner and more expedition is possible. All wheat is bagged at the machine and none is handled in bulk. Practically none of the growers have facilities for protecting their grain from the weather, and the bags are simply stacked up in the open field. At the stations the railroads have provided small sheds of galvanized iron, but these are never large enough to hold more than a fraction of the grain shipped. At all stations of importance there is competition in buying and large exporters have regular stations where their purchase are made. At the ports of shipment, Rosario, Buenos Ayres, Bahia Blanca, and the less important river points, there is comparatively little storage room, and when the exporter has a vessel ready to load he endeavors to put it on board directly from the cars. There are no country elevators in use, and the few at Rosario and Buenos Ayres are used simply for mixing houses and to facilitate loading in bulk when the shipper prefers that method of shipment. In December, 1900, preliminary steps were taken for the erection of grain elevators and storehouses at the various maritime stations of the Republic, a German firm being reported as having secured government authorization for the scheme, as noted in the Monthly Bulletin for May, 1901.

The present method is expensive and wasteful, but the loss from weather damage after thrashing is really much smaller than might be expected, being confined mainly to the top and bottom layer of bags. To develop the full possibilities of the Argentine wheat crop and secure commensurate returns for the labor invested would necessitate the construction of granaries for farm storage, and also radical changes in the methods of transportation, as all the railroad cars for this purpose are of the flat car style and provide no protection against weather.

AN IMPROVEMENT IN WATER TUBE BOILERS.

A criticism frequently urged against a common form of the water-tube boiler is that a single connection between the header and the drum has to carry the water circulating in all the tubes of the vertical section to which it is connected. The mingled water and steam are discharged with a considerable velocity into the steam drum, a condition favorable to the production of wet steam, but when this velocity is divided among the seven or more tubes constituting the vertical staggered row, the attainable velocity in each becomes restricted. In one well known type this objection is met, but at the sacrifice of portability, by using a large single header and connecting it to the drum with a large neck.

According to the views of Mr. James Anderson, engineer of the Kent Avenue Power House of the Brooklyn Rapid Transit Co., this restriction of the circulation not only tends to reduce that in each tube below the desirable rate, but produces an inequality of supply to the several tubes, and in a direction opposite to that required. On account of their direct exposure to the fire, a large proportion of the steam generated in the boiler is produced in the two bottom rows of tubes. These tubes should have the largest supply from the drop tubes in the rear, but if the water descending the rear tubes goes by the path of least resistance through the upper tubes, the lower ones will be robbed. Mr. Anderson's modification consists in making his headers of a width sufficient to make two or three connecting nipples into the drum, and putting into the rear or descending header a partition extending downward to the top of the second row of tubes. This plate has a hole opposite each tube to allow it to be cleaned or removed, but the holes are capped so that all the water descending through the back nipple is forced to make its way to the lower rows of tubes and they are assured of a constant supply, even under the severe conditions of forced draught and high furnace temperatures. A boiler embodying these modifications will be put upon the market by the New York Steam Boiler Co., 11 Broadway, New York.

OPPOSITION FOR THE TRUST.

Supervising Inspector Westcott, of Detroit, is now considering the appeal of Capt. James H. Buchanan from the decision of the inspectors at Port Huron. Capt. Buchanan was, after examination, refused an advance in license from first-class pilot to master and first-class pilot.

THE CRAIG SHIPBUILDING CO.

The Craig Ship Building Co., of New Jersey, has been organized and has taken over the property of the Toledo Dry-Dock Co. The new company has a capitalization of \$1,250,000, of which \$625,000 is preferred and \$650,000 is common stock. The Craig Ship Building Co. has executed bonds in the sum of \$150,000, secured by a trust deed covering all the property of the company. The deed and trust deed have been filed for record. The new officers of the company are: President, John Craig; vice-president, E. W. Tolerton; treasurer, John F. Craig; secretary, A. H. Merrell; general manager, George Craig. With the organization of this company John Craig retires from the active management. He leaves for California and Honolulu, and may decide to extend his trip. He will be gone for a number of months.

ABSTRACT OF PROPOSALS

Received at Duluth, Minn., March 5, 1902, for dredging at Portage Lake Ship Canals, Mich. Amount to be expended, about \$40,000.

NAME AND ADDRESS OF BIDDERS.	For Dredging per Cubic yard, scow measurement, (cents.)					For use of dredging plant in special cases per hr.	Total.
	Sec. 1, 38,000 cu. yds.	Sec. 2, 128,000 cu. yds.	Sec. 3, 88,000 cu. yds.	Sec. 4, 52,000 cu. yds.	Sec. 5, 60,000 cu. yds.		
The Buffalo Dredge Co., Buffalo, N. Y.	32	16	24	16	16	\$20 00	\$70,480
The L. P. & J. A. Smith Co., Cleveland, O.	30	16	25	16	20	20 00	73,050
James Pryor, Houghton, Mich.	19	10	17	10	10	15 00	45,470
Duluth Dredge and Dock Co., Duluth, Minn.	19.5	11	18	10.5	10	15 00	48,030
Samuel O. Dixon, Milwaukee, Wis.	25	22	25	12	12	17 50	71,750

STATEMENT OF THE VISIBLE SUPPLY OF GRAIN.

As compiled by George F. Stone, Secretary Chicago Board of Trade March 8, 1902.

CITIES WHERE STORED.	WHEAT. Bushels.	CORN. Bushels.	OATS. Bushels.	RYE. Bushels.	BARLEY Bushels.
Buffalo	2,429,000	344,000	332,000	2,000	569,000
" afloat	361,000	84,000			
Chicago	6,565,000	4,436,000	421,000	973,000	169,000
" afloat	417,000		40,000	77,000	
Detroit	289,000	115,000	22,000	80,000	28,000
Duluth	12,975,000	127,000	172,000	457,000	314,000
" afloat	511,000				
Port William, Ont.	4,453,000				
Milwaukee	639,000	203,000	361,000	34,000	176,000
Minneapolis	15,502,000	1,200,000	176,000	44,000	71,000
Montreal	85,000	11,000	217,000	22,000	59,000
Port Arthur, Ont.	250,000				
Toledo	83,000	874,000	55,000	168,000	
Toronto	66,000		15,000		45,000
On Canals	46,000	3,000	112,000	37,000	50,000
Grand Total	53,155,000	10,085,000	4,014,000	2,121,000	1,885,000
Corresponding Date, 1901	55,892,000	21,014,000	10,338,000	1,115,000	1,355,000
Increase for week					
Decrease " "	938,000	248,000	232,000	72,000	153,000

While the stock of grain at lake ports only is here given, the total shows the figure for the entire country except the Pacific Slope.

EASTERN FREIGHT REPORT.

Messrs. Funch, Edve & Co., New York, report the conditions of the eastern freight market as follows:

The only direction in which any activity in chartering has been manifested during the present week is for deals from the Bay of Fundy ports, timber and general cargo from the Gulf. The fact that owners have made some slight concessions in the rates previously asked have induced charterers to operate more freely. In connection with the general cargo charters effected from the Gulf, one or two steamers have given the privilege of loading part cargoes of phosphate at an extra loading port, which has considerably assisted charterers in combining general cargo from the usual Gulf loading ports. In other directions, however, the situation remains unchanged. Whilst there are a number of enquiries for coal to Mediterranean ports, owners are pursuing a policy of holding their interests rather than accept the present low figures indicated by shippers. Time charters are still confined to very small limits, and what little business is being done in this branch, is only for very short periods.

Although there has been a trifle more inquiry for sail tonnage, it cannot be said that the situation shows any improvement. The low rates bid on the part of charterers still appears a restriction to business of any consequence.

INSPECTOR OF HULLS.

PHILIPPINE SERVICE, MARCH 24-25, 1902.

The United States Civil Service Commission announces that on March 24-25, 1902, an examination will be held at the places mentioned in the accompanying list, for the position of inspector of hulls in the Philippine Service, at a salary of \$2,000 per annum.

Information relative to the scope of the examination may be found in sections 37 and 162 of the Manual of Examinations, revised to January 1, 1902. The subject of sea navigation will be included.

Age limit, 18 to 40 years.

This examination is open to all citizens of the United States who comply with the requirements.

This examination offers an excellent opportunity to young men to enter a service which has many attractive features, and to see a most interesting part of the world. The Philippine service is classified, and the law contemplates promotion on the basis of merit from the lowest to the highest positions.

Thirty days' leave of absence is granted each year, exclusive of Sundays and holidays, and those employees who are promoted to \$1,800 per annum are entitled to thirty-five days, or about forty days including Sundays and holidays. Leave is also cumulative, and at the end of three years those who have to their credit cumulative leave for two years may visit the United States without having the time in going to and returning from San Francisco charged against their leave. China and Japan are near at hand and are favorite places to visit during vacations.

Appointees will be required to pay their traveling expenses to San Francisco, but the Government furnishes them transportation free of charge on its transports from that point to Manila, but exacts a charge of \$1.50 a day for meals while en route, which is returned to the appointee upon his arrival at Manila.

The Philippine climate is good, and nearly all of the employees are in excellent health. Medical attendance is furnished employees without cost. Good accommodations (room and board) can be secured in Manila for about \$35 a month, while employees assigned outside of Manila obtain cheaper accommodations.

The office accommodations in Manila are good, and the work is done under pleasant conditions.

Persons who desire to compete should at once apply to the United States Civil Service Commission, Washington, D. C., or to the secretary of the local board of examiners at the places mentioned in the accompanying list, for a copy of the Manual of Examinations and application Form 1087. The application should be properly executed and filed with the Commission at the earliest practicable date. The regulation requiring that applications be filed at least ten days prior to the date of the examination will be waived in accepting applications for this examination.

March 8, 1902.

VAGARIES OF THE TIDE.

There are as many vagaries in the waters as in the winds. Why, for instance, should three great ocean currents send their warm waters across the wide Pacific, Atlantic, and across the Cape of Good Hope? There have been many theories advanced to solve the problem of their origin, but all have proved fallacious. Other and equally mysterious currents exist in well-nigh all parts of the world. The tides are so erratic in different parts of the world that one hesitates to accept the theory that the moon controls them in all cases, says the London Shipping World. It is on record that the sea has run for weeks out of the Java sea through the Straits of Sunda and thence back again for a like period without any perceptible rise or fall during those times. Then there is the equatorial current that flows into the Caribbean sea, the everflowing current to the eastward around Cape Horn, the cold stream flowing from the icy regions of the north past Newfoundland and Nova Scotia and along the American coast to the extreme end of Florida, the continual current running with a velocity of from four to five knots an hour through the straits of Gibraltar into the Mediterranean sea, the swift current running across the rocks and shoals off the end of Billiton Island, which apparently starts from nowhere and ends somewhere in the vicinity of the same place, and the current which, starting half way up the China sea, runs from two to three knots an hour to the northeast and finally ends abruptly off the north end of Luzon. Then we have those tidal vagaries known the world over as bores. Residents on Severnside are familiar with them, and those that run up the Hooghly and Irrawaddy rivers, from side to side, in a zigzag shape, till they reach their limit, often tearing the ships from anchorage, originate nobody knows where or why. The rush of waters in the Bay of Fundy is nothing but a huge bore sweeping all before it up to the head of the bay till the western waters have risen to the height of 50 or 60 feet. Off Southampton we have the double tides, while at Singapore it has been observed for days at a time that there has been but one rise and fall in the 24 hours. The tides may be, and very often appear as though they were, "moon struck," but they certainly are not controlled with hard and fast rules by that or any other body.

The Senate passed a bill appropriating \$18,000 for a light and fog signal station at Crisp's Point, Lake Superior, Michigan.



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WORK OF THE ISTHMIAN CANAL ENGINEERS.

The Scientific American for February 1, 1901, publishes a very interesting paper by Frederick Moore, summarizing the reports of the various surveyors, hydrographers, geographers, geologists, topographers, and other assistants engaged in the engineering work of the proposed Isthmian Canal. The printed material covering the work of the Isthmian Canal Commission is very voluminous, and with maps, diagrams, etc., its value is proportionate to its abundance. A resume of the work accomplished is as follows:

A chief engineer was appointed for the report on each of the canal routes to which the Commission was directed to give special attention. He was directed to make his headquarters in his respective territory, and to take general control of the field operations therein. Considering the results of the numerous surveys made in the past, it was decided by the Commission to limit the explorations in search for "other possible routes," as Congress directed, to that part of Colombia known as the Darien country, lying between Panama and the Atrato river, and a third engineer was appointed to direct the field work there.

Competent assistants, whose education and experience had fitted them for the special work to be done, were assigned to service under the three chief engineers; and laborers, boatmen, and other workmen were hired wherever their services were required. Twenty working parties were organized in Nicaragua, including 159 engineers and assistants, and 455 laborers. Five parties were organized in Panama, with 20 engineers and assistants and 41 laborers. Six parties were sent to the Darien, numbering 54 engineers and 112 laborers.

The chief engineers were directed to examine, with the aid of these working parties, the geography, hydrology, topography, and other physical features of the different countries. The schemes already planned were thoroughly tested, and further surveys were made in order to vary the line and select better locations wherever the conditions were found to be unsatisfactory. Accordingly, a complete project was prepared for each route, and the center line of each canal was marked where that had not already been done.

The study involved examinations of the terminal harbors and approaches, the locations selected for dams, locks, embankments, and other auxiliary works. Borings to determine the nature of the sub-surface at the sites of the locks and along the canal lines, and observations of rainfall, stream flow, sedimental deposits, and lake and ocean fluctuations, were, in the main, the work to be done. Attention was also given to the supplies of rock, timber, and other materials on the canal lines, available for construction and maintenance.

The results of these examinations and observations, and the material and data obtained, were sent from time to time to the headquarters of the Commission at Washington, where they were arranged and entered upon plates and profiles under the direction of the committees of the Commission in charge of the respective canal surveys. How the engineers did the work is interesting, and their life in the Isthmus indeed an experience.

Each of the parties were allotted a certain territory. They would establish a camp along the approximate routes, living in tents, huts of palm leaves, or, if near a village, in some "hotel" therein. From these they would work from 3 to 5 miles in each direction and then move on to a new camp, and so on until they met the next party or the next party's work.

The largest force was placed on the Nicaraguan line because it was the longest, because the many reports on the line were at variance, and because the data obtainable from the Maritime Canal Co. were found to be of little value, owing to inaccuracies, age, and the fact that the company's designs were for a canal which, for its shallowness, would be useless to-day. The number of authentic surveys that have been made on the Panama line (especially that of the International Commission of Engineers), and the full and sufficient data the Panama Company holds, made a large force there unnecessary.

The method of observing the regimen and discharge of the streams was simple. A stout line was stretched from bank to bank, or from trees on the banks. Below was placed a windlass to haul out the trolley car in which the gaugers rode. Of course, a point was selected as near as possible to the location at which knowledge was desired, having reference to the conditions of the stream itself, the aim being to secure high and permanent banks on both sides, as straight a channel with as uniform a depth and velocity as could be found, and avoiding any location which was a short distance above any tributary of importance which might create backwater. A gauge, graduated to feet and tenths, was placed in the stream near one bank and so situated as to be read conveniently from the shore. It was usually possible to fasten such a gauge in a vertical position in deep water to the trunk of an overhanging tree (for they grow over the banks and even in the streams in Central America). The height was recorded twice a day, and the mean of the two gauges taken as the river's height for that day.

At various intervals, depending on the change of the gauge, measurements of discharge were made from the trolley cars with current meters. Soundings were taken at a known distance from an assumed initial point and the velocity measured by submerging an electric current meter at six-tenths of the measured depth and holding it in that position for a length of time—usually one hundred seconds or more—sufficient to make a good determination of the velocity at that point. The operation was repeated at short intervals for the width of the stream, and from them the discharge of cubic feet per second was computed for each section by multiplying the depth, width, and measured velocity together. The discharge of the several sections added together gives the result for the stream. At the beginning and end of staging a careful note was made of the gauge and the mean depth of water taken.

Every other detail of the work was done in the same simple and thorough manner. Lake Nicaragua's every tributary was gauged and its supply accurately determined; for the control of the waters of the lake is vital to the practical operation of the canal, and has an important bearing on the cost and plans of the project. It fluctuates now some 12 feet, which materially hampers lock workings; hence the careful observations of the fluctuations, the maximum and minimum inflow and outflow, and evaporation. Because of violent breakers on the lake, the gauges had to be protected behind old vessels or whatever was found along the coast. At Las Lagas the boiler of a wrecked vessel was used to incase the gauges and evaporating pans.

Observations of rainfall were made with a funnel and a bottle, the relations of the diameter of the funnel mouth to that of the bottle being accurately known. The rainfall is a remarkable characteristic of Central America, and particularly Nicaragua. There is a radical and striking difference between the falls on the eastern and western coasts. There is a definite dry season on one, but rain may be expected the year round on the other. At Brito there is practically no rainfall from January to the middle of May, but during the rainy season the downpour often reaches 5.6 inches per day.

The evaporation test did not work, usually, as well as the others. Galvanized sheet iron pans, 3 feet square and 2 feet deep, were anchored in some protected body of water alongside a rain gauge, giving the water in them the same freedom, as far as practicable, as the outside water had. But the waves would wash over and fill them, the natives would steal them or haul them ashore and make washtubs out of them, and animals would overturn them.

The same windlass that trolleyed the cars across the rivers was used to tow out the sediment gauge cars. These too were galvanized pans 1 meter square and 8 inches deep. The upstream side was on a hinge. The pan was lowered into the streams and anchored. When the time came to haul it up, the gate was closed by a copper wire and the windlass put to work. First it was hoisted gently out of the water, then trolleyed to shore. The slit

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deposit is an all-important test, and has much influence on the location of the locks. Samples were also taken of the waters and allowed to settle ashore, each day the clear water being drained off and more muddy water poured on.

The measurements were made with 100-foot steel chains, they being checked each fortnight by comparison with steel tapes. All angles were measured carefully with a transit, deduced bearings being carried through as a check to the reading of the angles. The density of the forests and the incessant heavy rains or cloudiness materially inconvenienced the reading of the instruments. Special care was taken in chaining, plumb bobs being used on all broken ground. Elevations of surface were taken with a wye level and target rod at intervals of 100 feet, and at such intermediate points as were necessary in order to produce close and accurate profiles.

These are but a few of the innumerable tests that were made, but they serve to demonstrate that dependence may be placed upon the Commission's report.

DIRECT ODESSA-NEW YORK STEAMSHIP LINES.

The Deutsche Levante Linie, in connection with the Hamburg-American Line, will, in January, 1902, start a direct line of steamers between New York and Odessa.

The combination of these two lines insures the success of this enterprise, as both have a thorough knowledge of the trade relations between the Levant and the United States. The Deutsche Levante Linie sends five steamers each month to Odessa from Hamburg, two of which are classed as express.

It is evidently the purpose of the combination to capture the trade of the discontinued Barber Line, which ran until recently between Constantinople and New York. The new line will run from New York to Malta, Alexandria, Constantinople, Novorossisk, Batum, and Odessa. As will be readily seen, the route and itinerary will enable the new line to practically control the traffic between this part of the world and our Atlantic ports.

I am much pleased with the establishment of a direct line between Black Sea ports and New York, but I confess a disappointment that the line is not under the American flag.

I am now in my seventeenth year as consul at Odessa, and during that time have never seen the American flag at the masthead of a traffic steamer.

THOS. E. HEENAN,
Consul.

MARINE PATENTS.

694,355.—Conveying apparatus. James G. Delaney, New York, N. Y., and Thomas S. Miller, South Orange, N. J.

694,383.—Unloading apparatus. George H. Hulett, Cleveland, Ohio, assignor of one-half to Webster, Camp & Lane Machine Co., Akron, Ohio.

694,433.—Means for guiding and propelling steamships. Louis Sher, Atlantic City, N. J.

694,468.—Rudder attachment. Eugene C. Gaillac, Jonesport, Me.

694,486.—Submarine permanent way. Karl Leps, Hamburg, Germany, assignor to Johannes von Donat, Leipsic, Germany.

694,616.—Mechanism for operating ship windlasses and capstans. Frederick N. Connet, Providence, R. I.

694,643.—Submarine boat. John P. Holland, New-ark, N. J.

694,911.—Marine railway. James L. Crandall, Boston, Mass., assignor to H. I. Crandall & Son Co., same place.

Trade-mark 37,911.—Fish hooks. Henry Milward & Sons, Limited, Redditch, England. Essential feature the figure of a mailed arm holding in the hand a falchion. Used since 1861.

Trade-Mark 37,912.—Fish hooks. Henry Milward & the words "Iron Arm." Used since 1880.

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STEAMER.	MASTER.	ENGINEER.
City of Chicago	W. J. Russell,	Wm. J. McClure,
City of Milwaukee	John Stewart,	Chas. L. Barron,
Puritan,	W. A. Boswell,	Jas. D. Stuart,
Soo City,	Edw. Williams,	Byron Hopkins,
C. W. Moore,	A. J. Simons,	Ony McAntee,
Andy,	Chas. Morrison,	James McAntee,
Post Boy,	Jas. Vanderhoof,	R. M. Stevens.

NOTE: The steamers "City of Chicago," "City of Milwaukee" and "C. W. Moore," will run on the route between Benton Harbor, St. Joseph, and Chicago. The steamers "Puritan" and "Soo City" will run on our Holland route between Grand Rapids, Holland and Chicago. The steamer "Post Boy" will run between Chicago and Lincoln Park.

MR. W. H. LOUTIT, Grand Haven, Mich.		
Pentland,	T. McCambridge,	C. Ball.
MESSRS. CALVIN & CO., Garden Island, Ont.		
India,	James Dix,	Thos. Smith.
D. D. Calvin,	Chas. Coons,	Jno. Kennedy.
Chieftain,	John Doyle,	Thos. Gray.
Parthia,	David Lefavre,	George Sauve.
Frontenac,	Edw. Phelix,	Chas. LeRiche.
Johnston,	John Harris,	Herbert LaRush.
Bluebell,	John Dix,	Wm. Sauve.
Burma,	H. N. Smith,	.....
Ceylon,	John Ferguson,	.....
Augustus,	Jos. Achee,	.....

MIDLAND TOWING & WRECKING CO., Midland, Ont.		
Reliance,	F. Burke,	Frank Goodnell.
Magnolia,	R. Gilbertson,	Ed. House.
Metamora,	Jas. Tyndall,	Jos. McLaughlin.
Mentago,	Ed. Burke,	Jas. McGregor.
Menodoo,	Geo. Kinnee,	.....

MIDLAND NAVIGATION CO.		
Midland Queen,	Falherslonhaugh,	Joe. Abbey.
MESSRS R. O. & A. B. M'KAY, Hamilton, Ont.		
Strathcona,	Jno. A. Wing,	Jas. Smeaton.
Donacona,	J. W. Mandesby,	Robt. Daquill.
Lake Michigan,	Wm. A. Jorson,	Jos. Belanger.

STEWART TRANSPORTATION CO., Detroit, Mich.		
A. E. Stewart,	Fred Stewart,	Robt. Lacey.
NOTE: This vessel, building at Bay City, will not be out before August. We sold the Bielman last Saturday.		
LAKE ONTARIO NAVIGATION CO., Ltd., Picton, Ont.		
Alexandria,	E. B. Smith,	Thos. Milne.
Argyle,	G. O'Brien,	John Hazelett.
Aberdeen,	M. Hicks,	Frank Thenault.
L. S. Porter,	M. Hefferman,	Geo. Hazelett.
Water Lily,	Wm. Dulmage,	Geo. Sauve.
Niagara,	Not appointed,	Fred Corkey.
Isabella Reid,	H. Bonin,	.....
Rob Roy,	T. Brunette,	.....
Drake,	A. Durocher,	.....

MACKINAC TRANSPORTATION CO., St., Ignace, Mich.		
Sainte Marie,	L. R. Boynton,	R. E. Walsh.
Saint Ignace,	Not appointed.	Jos. Rousseau.

ISLAND TRANSPORTATION CO.		
Algolah,	G. W. Boynton,	R. McLaughlin.
Wau-Kon,	A. R. Graves,	.....

MR. J. B. MILLER, Toronto, Can.		
Seguin,	J. D. Symes,	H. Welch.
MESSRS. SYLVESTER, BRO., Toronto, Can.		
St. Louis,	Geo. Williamson,	.....
CHARLESVOIX LUMBER CO., Charlevoix, Mich.		
Pine Lake,	Eph. H. Small,	Jno. Chenock.
Naiad,	Chris. Edwardson,	.....

WILLIAMS TRANSPORTATION CO., S. Haven, Mich.		
STEAMER.	MASTER.	ENGINEER.
City of Kalamazoo	D. Morris,	C. La Bounty.
H. W. Williams,	F. Swails,	Perry N. Knaggs.
Glenn,	B. A. Cross,	Ralph Peterson.

NORTH WEST TRANSPORTATION CO., Sarnia, Ont.		
Huronic,	J. W. Bassett,	S. Brisbin.
United Empire,	Jno. McNab,	Frank Cleland.
Monarch,	E. Robertson,	T. O. Bard.

HOPE TRANSPORTATION CO., Detroit, Mich.		
W. R. Stafford,	B. Chamberlin,	Jno. A. Francombe
Ed. McWilliams,	Alex. Shanow,	.....

E. C. RECOR, St. Clair, Mich.		
New Steam Barge	Sylvester Mone,	Chas. Schunk.
MR. W. E. RICE, Port Huron, Mich.		
Rhoda Stewart,	Wm. J. Cowles,	Gill McLelland.

OLGA TRANSPORTATION CO., Tonawanda, N. Y.		
John C. Pringle,	A. P. Gallius,	J. N. Burns.
Ben. Harrison,	Phil. Hepner,	.....
Sweetheart,	Thos. McDermott,	.....
Unadilla,	J. B. McDermott,	.....

ST. LAWRENCE & CHICAGO STEAM NAVIGATION CO., Toronto, Can.		
Algonquin,	Jas. McMaugh,	Saml. Gillespie.
Rosedale,	Wm. Wright,	Jas. Findlay.
New Steamer,	James Ewart,	Edward O'Dell.

MILWAUKEE TUG BOAT LINE, Milwaukee, Wis.		
Christopher,	Wm. E. Wright,	Scott Pratt.

INSPECTOR OF BOILERS.

STEAMBOAT-INSPECTION SERVICE.
The United States Civil Service Commission announces that on April 22-23, 1902, an examination will be held at the places mentioned in the accompanying list, for the position of inspector of boilers in the Steamboat-Inspection Service.

Information relative to the subjects and scope of the examination may be found in sections 37 and 163, of the Manual of Examinations, revised to January 1, 1902. Age limit, 25 to 55 years.

From eligibles resulting from this examination it is expected that certification will be made to the position of inspector of boilers in the Steamboat-Inspection Service, at Dubuque, Iowa, at a salary of \$1,500 per annum, and to other similar vacancies as they may occur.

This examination is open to all citizens of the United States who comply with the requirements. Competitors will be rated without regard to any consideration other than the qualifications shown in their examination papers, and eligibles will be certified strictly in accordance with the civil service law and rules.

Persons who desire to compete should at once apply to the United States Civil Service Commission, Washington, D. C., or to the secretary of the local board of examiners at the places mentioned on the accompanying list, for a copy of the Manual of Examinations and application Form 1087. The application should be properly executed and filed with the Commission prior to the hour of closing business on April 12.

WINTER MOORINGS.

A 32-page booklet showing where about 2,000 vessels are laid up for the winter. It gives steamers, schooners and barges and a list of tugs as well as a list of the vessels which were lost last season and is quite reliable, being taken from correspondence at the various lake ports. Copies sent by mail prepaid on receipt of 25c. The MARINE RECORD Publishing Co., Western Reserve Bldg., Cleveland, Ohio.

FOREIGN COMPETITION.

The Bureau of Foreign Commerce, in its annual review of the export trade of the United States in 1901, is obliged to chronicle "a considerable falling off in the total value of manufactured goods sent abroad," instead of the continued increase expected by manufacturing interests. The increase of the previous year was largely due, it appears, not so much to our ability to invade and control foreign markets as to the special conditions of the European market, in a very busy period when European manufacturers were unable to fill promptly the orders they received. In 1900, accordingly, surplus orders came to us, but in the past year European manufacturers were able to meet the slackened demand, so that our exports of manufactures declined. What we export now consists largely, it is said, of "novelties"—articles of new design which possess exceptional excellence, including labor-saving implements. These are things which one "must have" when once known, regardless of price. There are, however, certain classes of articles which for special reasons we are able to sell cheaply, and these gain admission freely, even in countries that are jealously watching the "American invasion."

The decline in our exports of manufactures in 1901 was as much as \$46,262,912. This was offset to the extent of \$35,591,077 by an increased exportation of agricultural products, but the net result for the calendar year was a decline of \$12,565,194 in our total exports. In some degree the decline may be attributed to the fact that Hawaii and Porto Rico have ceased to be "foreign" countries. The business depression in Germany, Austria and Russia, with decreased purchasing power, is also a factor. But the chief cause, as already suggested, lies in the general fall in prices in Europe, coincident with the increased ability of European manufacturers to take all orders that come to them, so that fewer buyers are obliged to pay our tariff-enhanced prices.

EASTERN FREIGHTS.

With the exception of a few steamers fixed for account of the Canadian Government for hay, etc., from St. John to the Cape, there is no other particular feature to report in reference to the freight market, and rates in every direction show little if any change. Some further fixtures have been made for timber from the Gulf, and also for Deals from the Bay of Fundy ports, but the rates accepted are, if anything, on a slightly lower basis. The few steamers that have accepted cotton business from the Atlantic, have had to allow a reduction from previous figures. There is little more active enquiry for tonnage to carry coal from this coast to Continental and Mediterranean ports on the basis of about 7s 6d to 7s 9d per ton. Time charterers do not show any anxiety to take tonnage whilst vessels can be obtained at favorable rates for single voyages. General cargo business from the Gulf is practically at a standstill, offerings of cargo being extremely light.

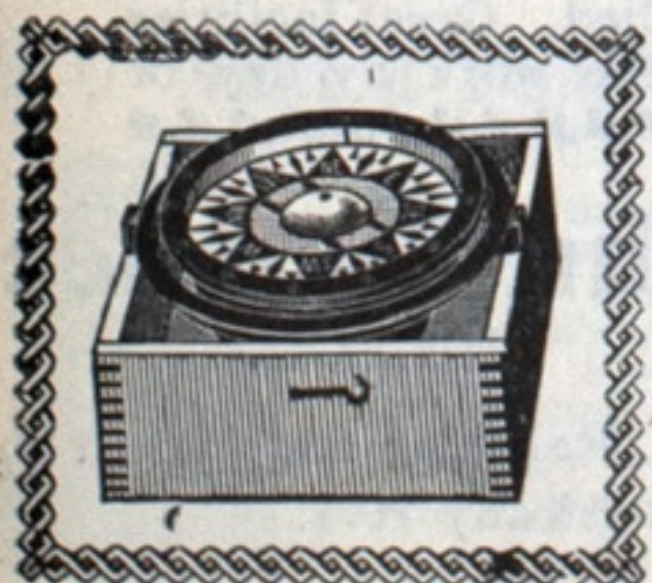
In regard to sail tonnage we can only say that nothing of interest has transpired during the past week, excepting a few lumber charters to the River Plate, at barely maintained rates.



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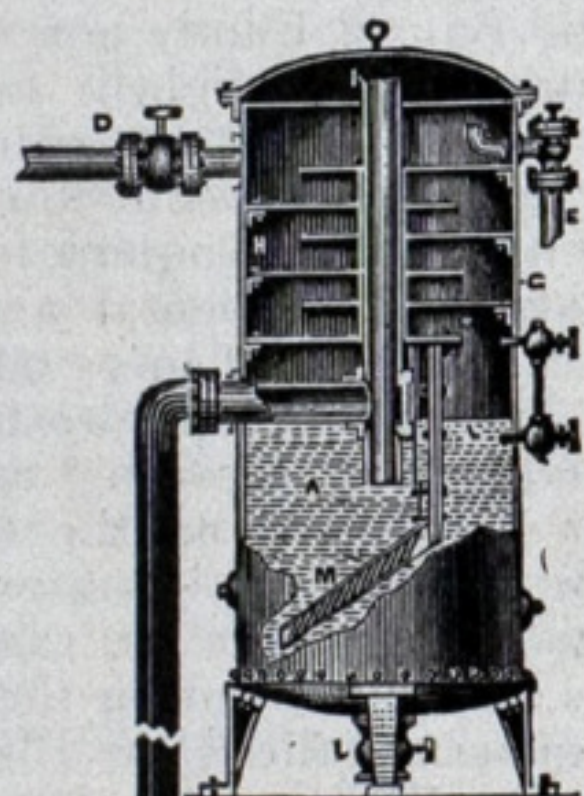
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Mitchell Transportation Co.'s steamer
Hendrick S. Holden.

Minnesota Iron Co.'s steamer Presque Isle.

American Steel Barge Co.'s steamer Alex.
McDougall.

Lake Michigan & Lake Superior Trans-
portation Co.'s steamer Manitou.

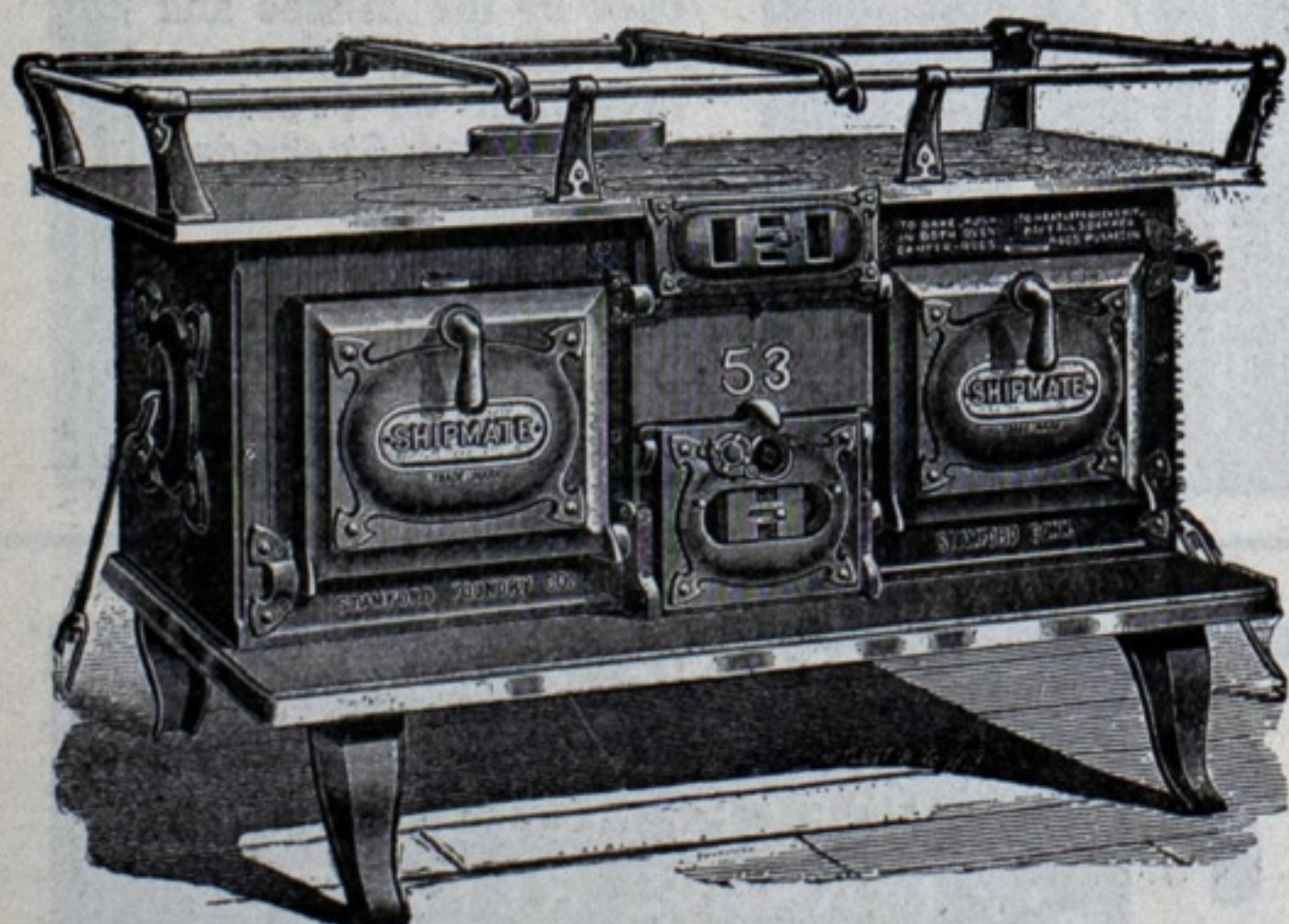
Bessemer Steamship Co.'s steamers S. F.
B. Morse and Douglas Houghton.

American Transportation Co.'s steamers
John Harper and Alex. Nimick.

Red Star Line's steamers Robert Mills and
Wyoming.

Wilson Transit Line's steamers W. D. Rees
and Andrew Carnegie.

And the steamer William R. Linn.



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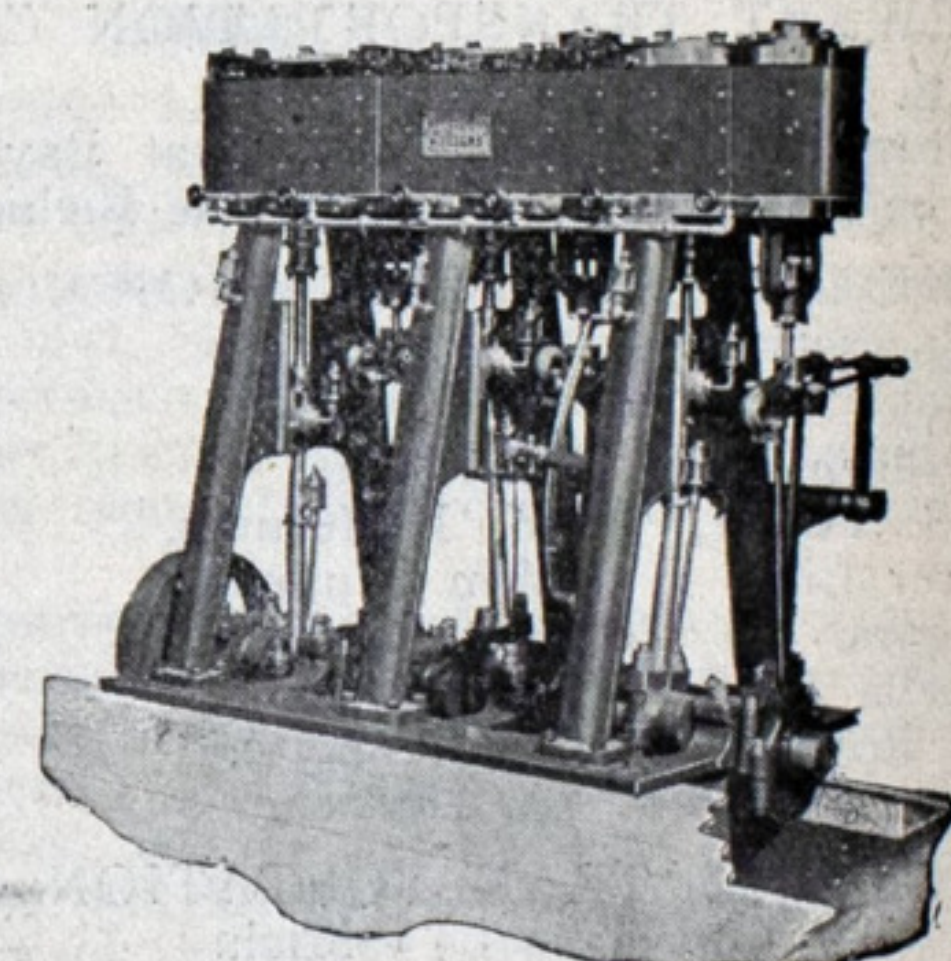


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PORT HURON.

Special Correspondence to The Marine Record:

Ed. J. Kendall says the ice in the lakes is breaking up and that it now looks as if there wouldn't be a piece of ice as big as your hat in either lake or river by April 1st.

The Marine Engineers' Association, No. 38 and 87, of Detroit, and association No. 55, of Marine City, came to this city on Tuesday, and conferred with the local engineers.

Robert Thompson, who will conduct the wrecking operations at the "Soo" next season, will leave for that place as soon as navigation opens. He will have two first class tugs and a number of lighters.

A great deal of kicking is being done here, by persons using row boats, on the new ruling that they must give 10 cents every time they come from Courtright to this side. It cuts a big hole in the profits of ferryman Fred Gallinaw, who runs a row boat ferry between here and the upper part of Courtright.

In the Meswald case, in the Wayne county circuit court, on Wednesday, Judge Frazer declared that the heirs of Mrs. Meswald should retain possession of the \$1,000 insurance policy which Capt. Meswald carried in the Shipmaster's Association. Henry Marx, of this city, is the administrator of the estate of Capt. Meswald, and maintained that the \$1,000 should go to Mr. Meswald's heirs.

THE RIVER AND HARBOR BILL.

The river and harbor bill was submitted to the House Monday, by Chairman Burton. A large number of surveys are provided, the list being practically the same as that in the river and harbor bill which failed last year. Section 4 authorizes the president to invite Great Britain to join in a commission to secure suitable levels in the Great Lakes and connecting waters. The act creating the Missouri river commission is repealed and the report severely criticises the extent to which government funds have been used in improving a river having insignificant traffic.

FURNACES AT THE "SOO."

A statement has been sent out from the Canadian "Soo" that the Consolidated Lake Superior Co. has completed its steel mill at that point. This will be under full headway by the first of April. At that time it will have a capacity of 500 to 600 tons of steel rails and about 2,500 tons of billets per day. Later on a tube plant will be opened at the same place, which will have quite a large capacity. Some of the vessel interests see interesting possibilities in this new mill relative to its needs of vessel tonnage. The requirements there will be almost equal to the off-setting of the importation of the Michipicoten ore, which the Clergues are contemplating. The rail mills in the United States are so well filled up with orders that many of them are able to take no more contracts. Any additional demand will have to be supplied therefore from importations. The Canadian mills will be convenient and a cheap resource, of which the railroads are expected to avail themselves. The lakes will be by odds the cheaper channel for transportation, therefore there will be a demand for boats to move this product. It is also a very notable condition that the supply of billets in this section is lamentably short of the demand, hence it is expected that any excess from Canadian consumption will find a ready market on this side of the border, which again will cause a demand for ships. The Clergue interests have not enough boats to meet all of these demands, and it is understood that efforts to purchase any number of boats have been of no avail, consequently if the billets and rails are to be imported the producers must resort to chartering in the open market.

FIREPROOF WOOD IN THE UNITED STATES NAVY.

It appears to have been settled at last that the use of fireproof wood, at any rate in the United States Navy, will be very much restricted. In the recently issued annual report of Rear-Admiral Francis T. Bowles, chief of the Bureau of Construction and Repair, it is stated that the bureau, after having conducted an exhaustive investigation of the qualities of fireproofed wood produced by two different processes, has found that while the products of both possesses

desirable qualities in rendering wood unflammable, they fail to show all the desiderata of a fireproof wood, which include the permanent retention of ingredients under all climatic conditions, freedom from corrosive properties, and unaltered strength and durability. The experience of vessels in commission fitted with fireproof wood, as well as the tests conducted by the bureau, showed that there was no practical advantage gained by the use of fireproofed deck planking, or by the use of fireproofed wood below the protective decks, and that also owing to the absorptive qualities of this wood its use was objectionable in those locations. Hence the United States Navy Department has dispensed with the use of fireproofed wood in the navy, except for such necessary joiner work as may be used above protective decks and on torpedo boats.—Cassier's Magazine.

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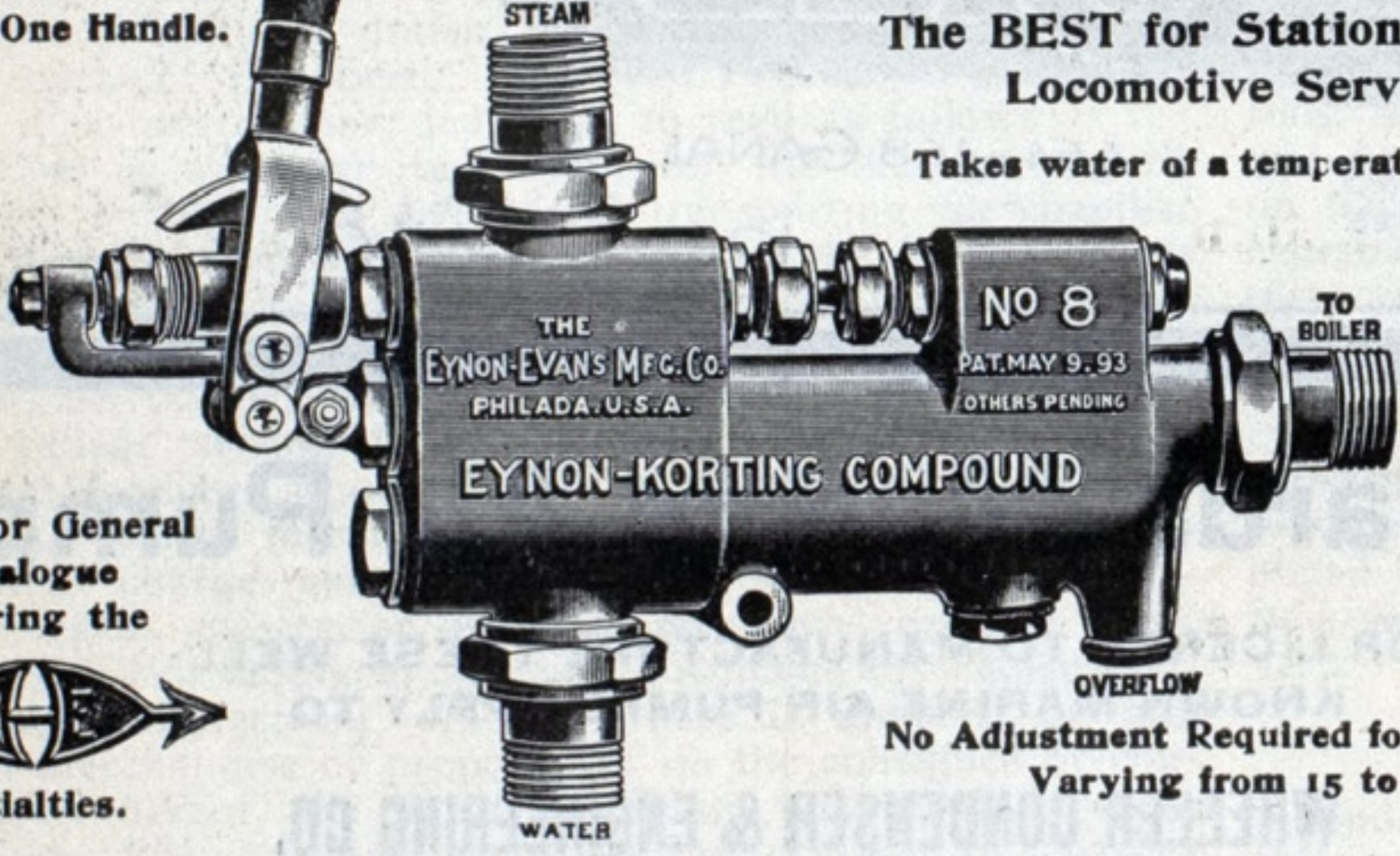
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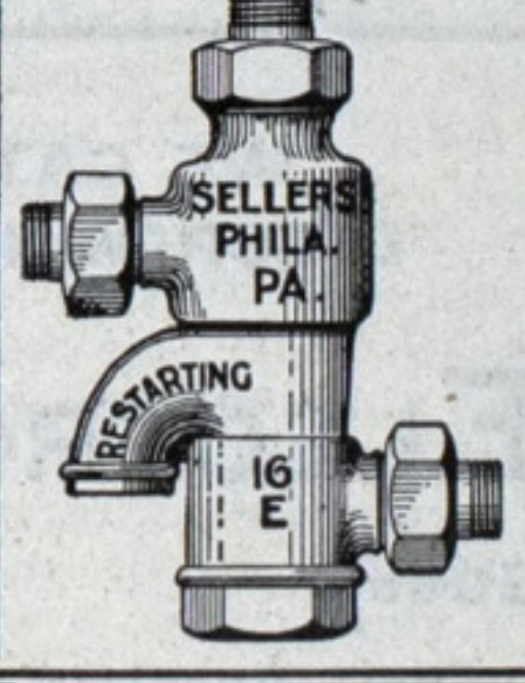
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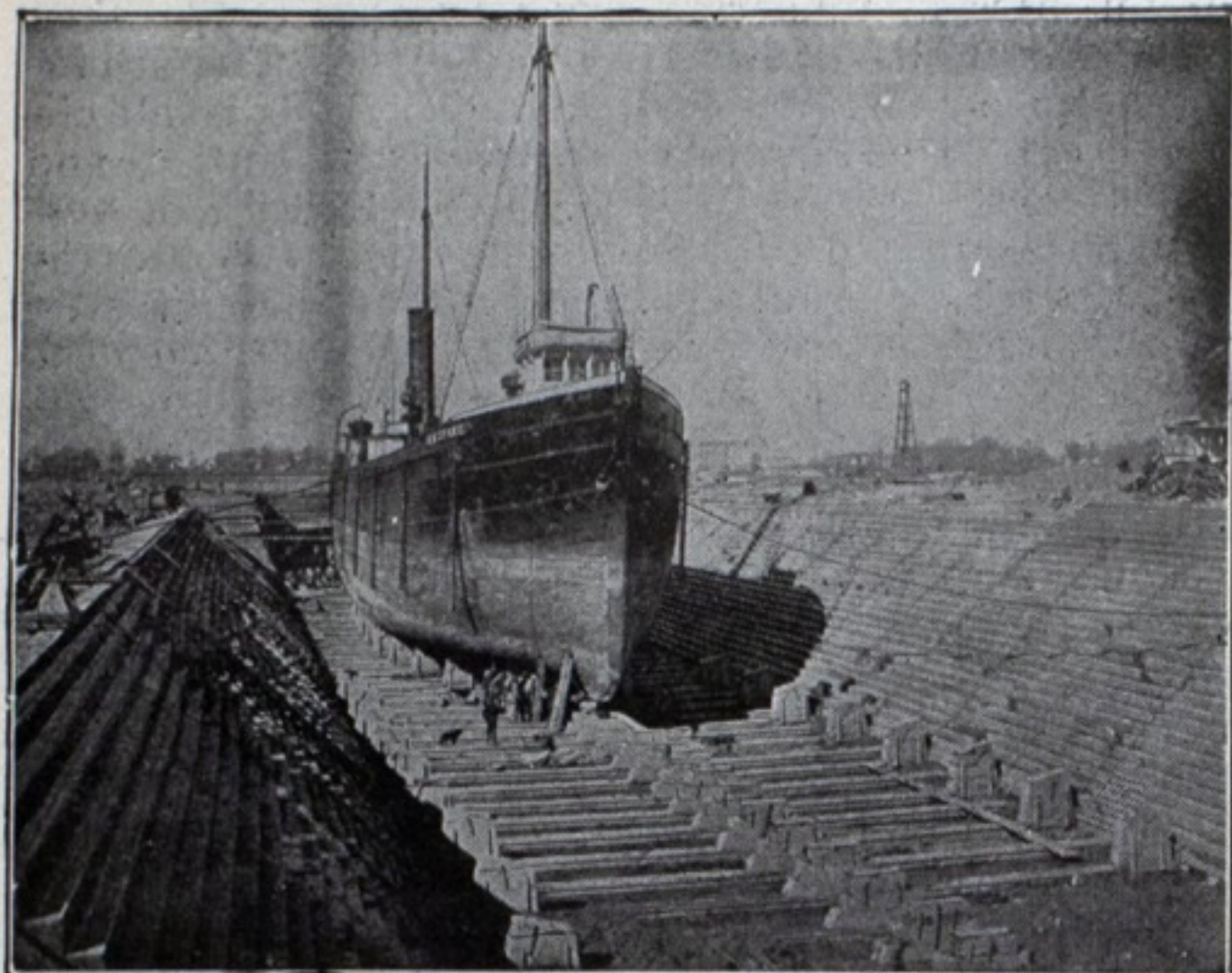
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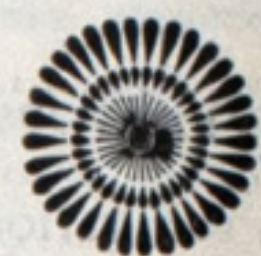
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